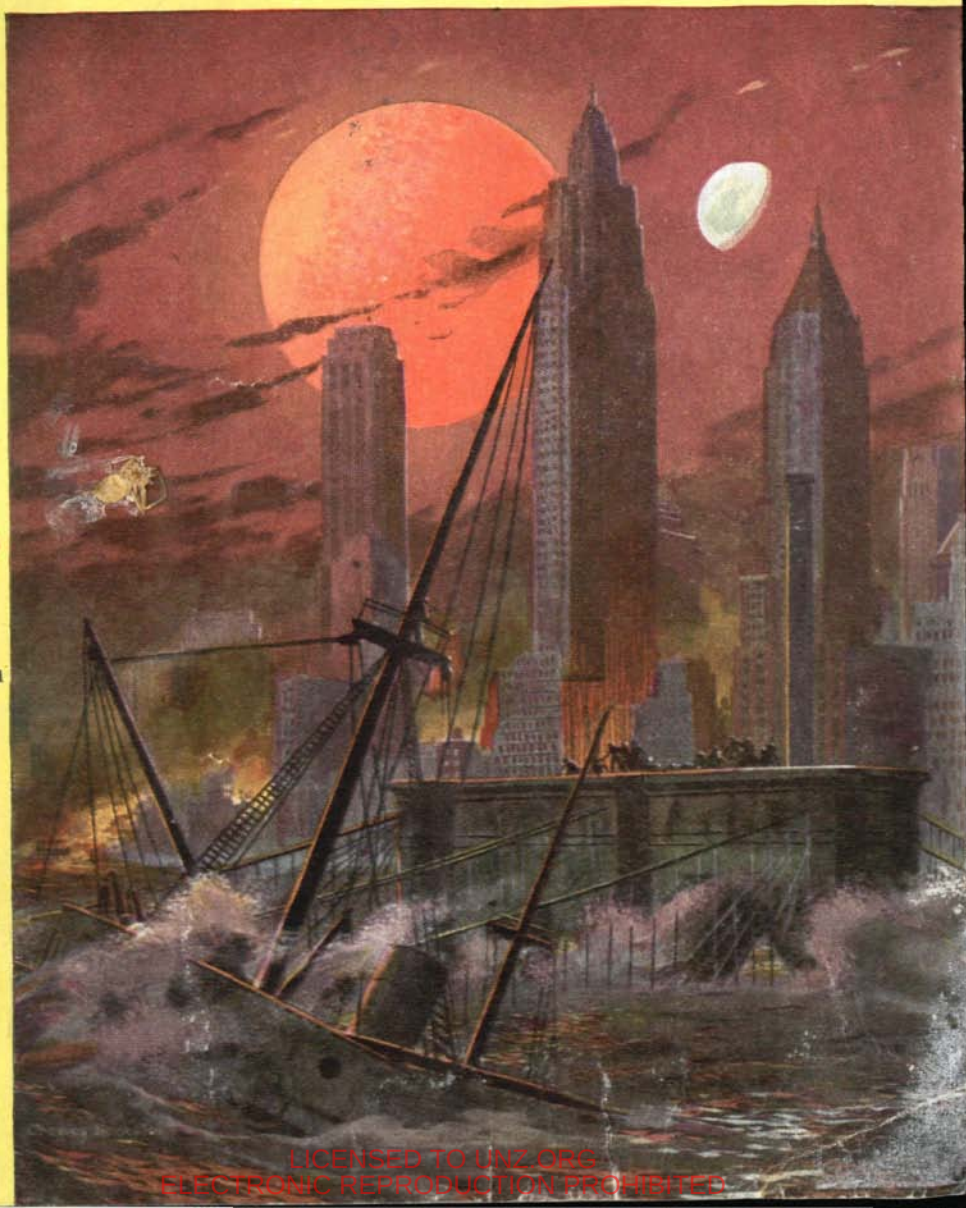


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NOVEMBER 1951

VOL. XLVIII, NO. 3

SHORT NOVEL

THE HUNTING SEASON, *by Frank M. Robinson* 6

NOVELETTE

IMPLODE AND PEDDLE, *by H. B. Fyfe* 57

SHORT STORY

TO EXPLAIN MRS. THOMPSON, *by Philip Latham* 98

SERIAL

ICEWORLD, *by Hal Clement* 120
(Part Two of Three Parts)

ARTICLE

MAKING WORLDS COLLIDE, *by R. S. Richardson* 83

READERS' DEPARTMENTS

THE EDITOR'S PAGE 5

THE ANALYTICAL LABORATORY 56

IN TIMES TO COME 114

THE REFERENCE LIBRARY, *by P. Schuyler Miller* 115

BRASS TACKS 160

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NEGOTIATION

"All I want is Justice!" is a cry that has echoed down the ages, followed usually by the sound of stone hammers, spears and shields, or, as ages passed, the terrible thunder of an atomic bomb. "In these critical times" usually precedes, accompanies, and follows that demand for justice.

At the moment of writing, negotiations are going on at Kaesong; not being a news magazine the questions there under negotiation will long since have been settled before this reaches the stands. No matter; there will be other questions under negotiation somewhere else, as critical to human lives and welfare. Some thousands of years, and a few light-years hence, other negotiations will be undertaken. No matter; the fundamental things apply, as time goes by.

Perhaps the central difficulty is the lack of a definition of justice—one that isn't particular, to a given situation, but general. It seems to me that most instances where injustice is claimed, the one claiming injustice feels acutely that his side of the matter has not been fairly heard and fairly considered. Perhaps we can describe the process of justice, if we can't define justice itself.

To attain justice between A and B, A's viewpoint must be heard, and *fully* understood. This means not merely what the facts A knows are, but *what those facts mean to A.*

Then B's facts, and what the facts mean to B, must be fully understood in the same sense. In the course of discussion, frequently A will learn from B some facts he did not previously have—this may completely alter A's viewpoint on the matter; similarly B's viewpoint may be altered.

If the facts educed do not bring A and B into agreement in a negotiation, there remains another question; is agreement sufficiently important to get A and B to yield on their individual ideas of what they want? Thus A might have pig iron for sale, and B may be a metal buyer. B feels A's price is outrageously high; when he learns that A has been forced to pay higher wages, and import ore from a more distant—and expensive—source, B may modify his views, and accept the higher price. Or B may feel that the price is not justified for his purposes; concrete can replace the high-cost steel in his contemplated use. He agrees with A that the price demanded is necessary, but does not choose to accept the price. A and B agree to disagree without rancor.

In the case where agreement is more pressing, things may work differently. The husband-wife argument about mountains-vs-seashore may wind up after full airing of viewpoints, with husband still feeling that the mountains are to be pre-

Continued on page 170

THE HUNTING SEASON

BY FRANK M. ROBINSON

It takes a lifetime to educate a man—but if you try violently enough, you can re-educate him—most dangerously—in three days!

Illustrated by Welker

I.

*The Warders strutted up and down,
And kept their herd of brutes,
Their uniforms were spick and span,
And they wore their Sunday suits,
But we knew the work they had
been at,*

*By the quicklime on their boots.
"The Ballad of Reading Gaol,"*

Oscar Wilde

David Black was afraid.

He had tried to control it but he knew it showed in the glistening shine on his pale face. In the nervous jump of his cheek muscles, and in his restless pacing back and forth on the faded rug, alternating be-

tween the rumpled bed and the worn writing desk, with stops every few minutes at the soot-streaked window to note the position of the setting sun.

It was late afternoon. An hour or so more and the hunting season would begin.

He crossed over to the bed and sat down. He was afraid, he thought, like so many others must have been. Afraid with the fear that showed in the sudden palsy of your hands, the fear you could smell in the sweat that soaked your clothes.

But the State had promised to review his case, he thought. And when they did, there wasn't any doubt that he would get a reprieve.



The State, in its benevolence, would call him back and restore his rights as a citizen. Perhaps they would reprimand him for having expressed his thoughts as he had, but it would go no further.

The thought cheered him somewhat. The State would rectify its error and that would be that. But they would have to hurry—

He forced it from his mind. The noises from the street drifted through the partially open window and he listened attentively, sorting them out and identifying them in his mind. There was the honking wail of the conveyances-for-hire, the cries of the newsprint vendors, and the mumble of the early evening

crowd, looking for a happy time in the hot and steaming heart of the city.

The noises and cries of the human jungle; the jungle that he was soon going to have to hide in.

He lay back on the bed, his head raised a little by the pillow, and stared at his room. It was neo-American, early Western Civilization period; a relatively shabby room, even by twentieth century standards, equipped with a primitive bed with protesting springs and gray linen worn to the thickness of tissue, a wooden writing desk with deep scratches on the top, and the usual floral patterned wallpaper that was peeling in spots. There

was no ventilation and no breeze—the curtains hung stiffly by the open window—and the room was filled with the muggy heat of summer. Outside the window, the red neon sign of the candy shop just below winked on and off, first suffusing the room with a reddish glow and then fading off into blackness.

The room wasn't essentially different from a monk's cell of the middle ages, he thought. But for what he had been able to pay, he couldn't have expected anything better.

His hand automatically felt in the pocket of his pants and came out with a leather billfold. There were cards in it that gave him a synthetic identity, good for at least the three days of the hunting season, and a few green money bills of small denominations, barely enough to live on for that length of time. He moistened his thumb and started to count the few bills, then went through the pieces of silver.

He had just finished when there was a knock on the door.

He stiffened and shot a glance towards the window. It was dusk and the street illumination bulbs had been turned on, but a pale glow still lingered in the west. A half hour of grace remained. Reed must be paying him an early visit before the hunt, not an unusual thing to do. He had done it himself upon occasion.

He got up from the bed and

brushed his damp black hair back from his forehead, then opened the door.

Reed stood smiling in the doorway, wearing the usual uniform of the hunt: an all-black, finely tailored suit of the particular time period the hunt was being held in, with a thin red thread woven in around the collar and the cuffs. The black of the suit represented the web of the huntsman, the red the trail of the hunted. Reed himself was a tall, somewhat thin man, with tightly compressed lips and a hungry looking face.

"You still have half an hour, David," he said. "I didn't think you'd object to seeing me before the hunt begins." His voice was husky and well-modulated, studiously polite.

Black smiled somewhat hesitantly. "I don't believe I have any choice," he said, standing to one side.

Reed came in and eased his light frame into the straight backed chair by the writing desk. "That's right," he said, "you don't." He settled back in the chair, making sure the crease in his pants cut over his knees correctly, and looked the room over casually, paying special attention to the rumpled bed and the well-filled ash tray on the bed table. "Afraid, David?" His voice was tinged with mock concern.

Black felt a growing sense of shock. He didn't know exactly what he had expected; perhaps a *you-and-I-know-this-is-all-a-mistake* attitude, or an expressed hope

of stringing the hunt along until a reprieve arrived from the State. But Reed was treating him like any other quarry, as if he had every intention in the world of carrying the hunt through to its logical end.

"Just nervous," Black lied, his face fading to a chalky white. "I've had too much experience with the hunts to be frightened."

Reed smiled bleakly. "I like your spirit, the hunt promises to be that much more entertaining. But don't forget that all your experience happens to be on the other side." He paused a moment for the effect, then asked casually: "Do you have any idea how many citizens have signed up as huntsmen?"

Black resisted an impulse to ask; Reed would undoubtedly answer his own question.

"Close to five hundred! Think of that, five hundred!" Reed chuckled pleasurably. "You see, it was the lure of experienced game that brought them out."

Black stared blindly out of the window, not seeing anything beyond the pane of glass and not bothering to reply to the voice at his back.

"Considering that you're a traitor to the State, you haven't been treated too badly," Reed continued sharply. "You're much better off than if we had held the hunt in Sixteenth Century Spain during the inquisition or perhaps ancient Rome during the reign of Caligula. You may even like it here during the brief period of the hunt. It's

a fairly civilized culture, at least in a material sense."

"Nothing has come of my petition to the State for another hearing and a reprieve, has there?" Black asked, trying to keep his avid interest from showing in his voice.

Reed shrugged. "I shouldn't expect one, if I were you. For myself, I think it rather brazen for a traitor to ask for one."

Another shock. "I don't consider myself a traitor, Reed."

"You questioned State theory, and you questioned it in public," Reed pointed out. He smiled. "You should learn to control your tongue."

It was becoming clearer by the moment, Black thought with despair. He had voiced objections to the hunts several times, but each time he had thought he had voiced them on a more or less personal basis, to a few private acquaintances. But there were cash rewards for those who denounced traitors to the State, and one of them had probably made capital of his utterances. And that one—though his accuser's name had never been mentioned at the trial—was probably Joseph Reed.

With sudden mental savagery he clung to his belief that the State would review his case and grant him a reprieve. They had to! In every other way, he had been an outstanding citizen—

There was a short silence and then he asked Reed suddenly: "You've studied up on this civilization, haven't you?"

"The mark of the experienced hunter, David."

Black stalked to the window and looked out into the neon-lit darkness, "I have only a few moments left," he said shortly. "I would like to spend them alone."

Reed stood up, ready to leave. "You know the rules?"

"You know I do."

Reed opened the door, then paused, his face thoughtful. "You have your choice of the way in which you want the hunt to end."

The quarry was always allowed that much of a choice, Black thought.

"From the front. One burn, right between the eyes."

Reed caught the implication and laughed. "Don't try to embarrass me, David." Then he was gone.

He still had twenty minutes to go before sundown.

Black locked the door of the room, then went into the not-too-clean bathroom, and stripped, stuffing his clothes into a paper bag. He nearly scalded himself before he found how the knobs for the shower worked, then he soaked himself thoroughly, sudsing every inch of his body with a cheap, deodorant soap.

There was a full length mirror on the inside of the closet door and he inspected himself briefly before going on to the next step. He was of medium height and fairly muscular, with the rugged, hard look that heavy physical exercise had given him. His face was broad and not too

handsome, falling more into the trite classification of another time as "clean cut."

There was little he could do about his skeletal framework, he thought, or the little mannerisms of speech and action that were peculiarly individual, peculiarly his. But there were some things that could be changed. He hunched his shoulders together and let them slope forward a little, then practiced a slightly mincing gait in front of the mirror. It wasn't altogether satisfactory, and there would probably be lapses as he forgot himself, but at least it was different from his usual stride.

He turned from the mirror to one of the dresser drawers, took out a small jar, and applied a very thin coating of its contents to his body, working from his face down. A moment later he was one shade lighter. A few snips with the scissors gave his hair a shaggy but short look, and a little wax altered the lines of his face.

The dresser yielded a change of clothing complete from shorts to a carefully rumpled, cheap suit. He dressed and topped off the result with a pair of thick-lensed glasses. The results, when viewed in the mirror, weren't bad. The student type, a variety common to this particular age.

Then he began to feel a growing sense of hopelessness. The shower and the bath with the strong soap would throw off any mechanical sniffers that Reed might have—but

only for a few hours. After that, the odor of the soap would wear off and the sweaty, telltale smell of his own body would replace it. And his change of clothing and facial disguise would fool only the most incompetent of huntsmen.

But even if he fooled only one, it would be worth it.

He placed the paper bag with his clothes in it in the metal wastepaper basket and flamed it with his Williams. There was a puff of smoke from the basket and the slight odor of scorched paint.

At least, he reflected, he had had sense enough to make plans in case the State's reprieve was delayed or late in coming.

Five minutes to go—

He could feel the moisture start to bead on his forehead again. Outside was the jungle of some four million people who would live their shallow lives and go their insignificant ways the next three days in total ignorance of the five hundred huntsmen among them. The five hundred eager citizens of his own time, all experts in the hunt, all carefully schooled in the culture of this century, all tensely waiting for the moment when they would start to comb the city for him.

And Reed himself was a relentless hunter, the kind who liked to toy with the quarry, who let the quarry think he had a chance up to the very last.

Black shivered, recalling the several hunts that he and Reed had been on together. But that was a

long time back, when he had still enjoyed the favored rank of citizen; before he had been denounced to the State, convicted in the trial, and consequently made available as a quarry for the hunt.

It must be only a question of time before his reprieve was forthcoming!

He looked out at the dirty granite buildings, steaming in the summer heat, and felt a momentary touch of nostalgia, an intense longing for the neat and orderly existence he had recently led, for the youthfulness that had never questioned Authority, and the regimented thinking that had never allowed misfortune-breeding thought about the hunts.

Sixty seconds—

His chances were very slight. No quarry had ever survived the hunts. Reed would get him, if not the first day, probably the second, and definitely the third. And unlike Reed, he was at a disadvantage because he knew so little about the civilization he was stranded in. He was a stranger, he had never hunted here before.

But surely the State—

There was a mechanical whirr behind him.

He whirled. The noise was coming from a small machine attached beneath the bed. With slightly metallic overtones, it said in the suave tones of Joseph Reed: "It's sundown, David. We're waiting for you."

The hunting season had just opened.

II.

*Silently we went round and round,
And through each hollow mind
The Memory of dreadful things
Rushed like a dreadful wind,
And Horror stalked before each
man,
And Terror crept behind.*

"The Ballad of Reading Gaol,"

Oscar Wilde

She was small and blonde and apparently lonely; she had settled at his table a few minutes before, unasked and unwanted.

"What's your opinion on the minorities question?" she asked.

He looked at her, puzzled. "Am I supposed to have an opinion?" he asked slowly.

She took in his cheap suit, pale face, and thick glasses with a practiced eye. "You look like the kind who should have an opinion," she said. "You look like you belong to one."

He said cautiously: "Maybe I do."

She nodded, faintly triumphant. "That's what I thought. I can spot them a mile away."

The words were unfamiliar, but the tone wasn't. The kind of tone that citizens used in referring to rank-and-file of his own time. His face flushed slightly.

His companion suddenly looked sorry. "Don't mind me," she said. "This is my night for being nasty. I was stood up and I guess I'm taking it out on you. Have a drink?"

He nodded and transferred his attention to the crowd, studying the faces of the people in the tiny room. Somewhere close by a hoarse voice whispered lyrics into a microphone, trying to drown out the yammering piano that accompanied it.

The girl gestured to a nearby waiter and turned back to her too-sober friend. "What made you pick out this particular spot? It's my own favorite."

She couldn't be a huntsman, he thought alertly. She was too soft, physically and mentally. And she didn't have the hard fire in her eyes that a citizen did; she was safe.

"I thought this would be just the place to get away from it all," he said dryly.

But he still had a long way to go, he thought. He had left his shabby hotel room at sundown, plunging into the neon-lighted wilderness, alive with a multitude of sights and sounds utterly unfamiliar to him. The swirling crowds and the blinking lights and shrieking noises had confused him for a moment, and then he had headed for the busiest section of the city, looking for the crowds where he would be inconspicuous. Inconspicuous—and safe from Reed's sniffers or any one of the five hundred anxious citizens searching for him.

He found just the section he wanted in the entertainment district of the city; the section snarled with traffic and throngs of people, red-faced from the reflection of the signs advertising the cheap wine

houses and the theaters. He had chosen one of the wine shops at random and found a miraculously empty booth at the rear, where he could watch the people as they drifted in and out.

The waiter was back with two glasses, one for him and one for the girl. Black caught the green of a small roll of bills in her purse when she paid for them and he watched her carefully when she put the purse down on the leatherette seat beside her. It was on the outside, the strap hanging over the edge.

"Here's mud in your eye," she said, raising her glass. She hesitated when she had it up to her mouth and gave him a coy look. "If I'm going to drink a toast, I'll have to know your name."

"David," he said absently.

"I like plain names," she said. "They tell you so little about people."

He felt ill at ease. Women had always acted more circumspect in his own time, more along the lines of what the State had deemed worthy for the citizen class.

But he forgot. That class didn't exist here.

"You're a little on the shy side, aren't you?" the girl asked, her eyes laughing at him.

He wasn't listening. Two tables away a middle-aged couple were watching him intently. He stared back and then let his eyes slide away, but not before he had seen their look of intense interest change to one of half-concealed amuse-

ment.

His palms felt sticky. Maybe it was just his imagination, maybe he was mistaken.

The three-piece band broke into a ragged harmony and the minute dance floor was soon crowded with bumping couples.

"The best way to overcome shyness is to dance," the girl suggested, "if you feel up to it."

"I'm not very good," he said, and proved it in a torturous turn or two of the floor. The middle-aged couple were close behind him, watching every move.

He was right, he thought, panicky. He was caught in the huntsmen's web. They had spotted him already and it probably hadn't been too hard. The entertainment district had been the logical place for him to try and hide in, and a few hundred huntsmen could cover it without too much difficulty. They had probably been spotted around in the different establishments, just waiting for him to show up.

Back at the table, the girl said: "What's eating you? You look like you've seen a ghost."

"It's nothing," he said quickly. "Just warm in here."

"Maybe we ought to leave," she suggested. "I know just—"

"No thanks."

"I've been wasting my time, haven't I?" Her face was frozen in a tight smile.

He smiled. "You said it, I didn't."

Two tables down, the middle-aged man and his wife caught his

eye and nodded slightly. They had spoken to the waiter a moment before and were now holding the same type of glass to their lips that he had. Black understood—a cat and mouse play. You have wine, we'll have wine. You have something else, we'll have something else. Just to let you know we know who you are, my boy.

There wasn't any doubt about it. They had the lean and hard look that rugged physical training gave to all citizens. And they were enjoying this. They wouldn't notify Reed or call for outside help until he went to leave. They wanted to see him sweat and struggle for a while.

He ran his finger down the list of drinks on the menu but the names were confusing and didn't tell him what he wanted to know, so he turned to the girl and asked her a carefully phrased question.

She looked at him curiously. "You meet the oddest whacks in this town," she said, half to herself. Then: "Try beer."

He switched to beer. The middle-aged couple did likewise. Several bottles later the middle-aged man got up and headed for the rear of the room. Black smiled grimly to himself and stood up to follow.

"Don't be long, David," his companion giggled, then turned back to look at the floor show where a tired M.C. was mouthing a tired comedy routine.

"Don't worry," Black said soothingly. "I'll be right back."

After he had left, the girl's slightly fuzzy expression quickly faded to one of beady-eyed sobriety. She looked down and noted with satisfaction that Black had stolen her money-filled purse, then turned her attention to the woman two tables down. The middle-aged man's wife was staring worriedly in the direction her husband and Black had taken, obviously debating whether or not to call the manager. Her fingers were playing idly with the catch of her handbag.

She would have to risk it but it had to be done, the girl thought. She got to her feet and weaved unsteadily toward the entrance. Halfway there, she lurched against one of the tables and accidentally knocked a handbag to the floor. Before she could stop herself, she stepped on it, then apologized drunkenly and retrieved it for the furiously angry woman it belonged to.

Outside, in the muggy night heat, she took a brief moment for self-congratulations. She had started Black's education and she had managed to furnish him with money that would undoubtedly come in handy. And when she had stepped on the handbag, she had felt the satisfying crunch and pop of the tiny tubes of a transceiver communication set.

Which meant that Black was, for the moment, in the clear.

He dropped from the window into a refuse laden alley smelling

of garbage and stale beer and started running. Once on the open street he slowed down and headed east, toward the park bordering the lake.

His head was throbbing and he felt sick. There had been the two of them in the small, dirty washroom. He hadn't meant to do more than bind and gag the middle-aged man, but the man had struggled and tried to scream, to attract attention. So he had to . . . to—

To kill him. The expedient thing to do; the only thing that he could have done under the circumstances. But the middle-aged man had, in a sense, only himself to blame. He had forgotten one of the basics of the hunts—that cornered quarry are desperate and therefore dangerous.

He swore violently to himself. *He hadn't meant to kill the man! And conceivably it could prejudice the State against him.*

The changing lights on a traffic signal caught him halfway across the street and he found himself in the middle of a rushing stream of traffic, dodging the wildly honking cars and clanging trolleys and swearing at the shrill whistle of the traffic policeman that called attention to himself. Then the shadowed safety of the park swallowed him up.

He found a bench and sat down, relaxing in the blackness. Reed would be along, but not for ten or twenty minutes yet. Time enough to consider his situation and then be up and—running again. His

position had improved but only slightly. He had successfully evaded the first huntsman and had stolen a large supply of the green paper money. In this culture, as in all others, it would be more than useful.

But the death of the first huntsman would make all the others that much more vigilant, that much more anxious to be known as the first to find him, the first—so to speak—to nail his pelt to the wall.

His thoughts broke off and he tensed. Somebody was coming up the walk.

He sank farther back into the darkness that hid the bench and held his breath; his hand curled tightly around the Williams in his pocket. The footsteps approached, paused at the bench, and then passed on.

"Sorry," a voice trailed back, "I thought it was vacant."

Just a young couple, strolling in the park in summer. A practice, he remembered, that the State frowned upon, but one not unknown.

He let his breath out in a slow sigh and picked up his thoughts where he had left them. The hunt itself was divided into three sections. The first from sundown to sundown. Then an hour break, and the hunt was on to the next sundown. Another hour break, and a hunt to the finish. If Reed was able to, he could end it during any one of those periods.

He probably wouldn't choose to do so, however. Reed would let him run until exhaustion and lack of



sleep and the frustrating feeling of being cornered had begun to weigh on him and distort his common sense. It seemed likely that Reed would play with him until the very last part of the hunt.

But he didn't dare depend on it. Reed might consider that he would think along those exact lines—and plan accordingly.

He yawned. It was past midnight now. Most of the theaters and wine shops would be letting out and the merry-makers would be going home. The city would revert back to a desert, populated only by night watchmen.

And once the city became even partially deserted, he'd be that much easier to track.

He got up and started walking down the sidewalk, keeping within the shadow of the trees. Somewhere a few blocks behind him, he could

hear the low purr of a car traveling slowly down the street. He turned and made it out, two blocks down. Its headlights were off. One block over was another car, motor idling, just creeping down the pavement. And under a street lamp, a block away, a man was lighting a cigarette and staring calmly in his direction.

They were waiting for him to do something.

Waiting.

He cut through one of the grassy stretches of the park and ran south, the only avenue of escape that didn't seem to be covered by his pursuers. His frantic stride took him through a few blocks of soft shrubbery and grass, and then the park was at an end. There was nothing beyond but a large, open court in front of a railroad station. The court was lit by a string of street lamps, so he couldn't cross it without being seen.

There was no escape that way.

A car, one of those that had been idling in the park before, drove up to the court. Nobody got out.

Sweat started to creep down Black's spine. This could be the final showdown as well as not. They knew he was dangerous, that he had killed one of the citizens in the hunt. They could very well have decided not to let him go farther. Even now they were probably just waiting for Reed to show up. And the cars had spotlights; they had only to light up his particular patch of shrubbery—

He glanced desperately about. In front of him was the court, and behind—and not too far behind—the soft pad of other footsteps on the springy grass. On his right was another well lighted and undoubtedly well patrolled street while on his left—

On his left was the edge of the park and the court, an iron railing and a sheer drop to the freight yards of the train station—a maze of tracks, box cars and empty commuter trains sitting on their sidings.

He tensed his legs under him and made a sudden dash for the railings. There was an eerie silence broken only by the slap of his feet on the cement of the court and then he was at the railing. He extended his arms in front of him and dove over, doing a flip in the air so he would land on all fours. There was a split second of breathless falling and then he thudded into the cinders along the tracks, the sharp coals chewing into the palms of his hands.

He scrambled to his feet and dodged behind some freight cars, then decided to follow the tracks still farther south, until he hit a residential section where perhaps he could lose himself again.

He paused only long enough to glance back and see the gentle bobbing of lanterns as a few men gathered at the railing where he had gone over. Then the lanterns dipped and he knew they were climbing down after him.

They still hadn't made a sound.

The houses were crowded close together along both sides of the narrow street. Some were small, clapboard affairs, the wood black and rotting from wet winters and rainy springs, sandwiched in between the frowning tenements of brick where the rooms were rationed one to a family. On some of the buildings, Black could see people sleeping on mattresses placed on the rusting fire escapes. Sometimes he even thought he could hear their snoring and other noises of slumber.

The alleys and the back yards were as quiet as the streets, but smelled worse. He doubled through several of them, through yards that were nothing but clay and cinders, and up alleys alive with little furry things that blinked their beady eyes suspiciously at him and then went back to rooting in the garbage.

It was a district that reminded him of the sections where the rank-and-file of his own time lived. A hun-

dred thousand people buried alive in crumbling brick and mortar flats. He stopped under the street lamp at one intersection and cocked his ear, listening. There was no one in sight but he could *feel* the people in the buildings, tossing and muttering on stinking mattresses in bedroom cells or else pacing the floor, their eyes burning for the sleep that wouldn't come.

Or maybe couples had sprawled out on blankets in the back yards, snatching the oxygen from the dry clumps of faded green grass, waiting for a cooling breeze to work its solitary way down the thin canyons that separated the buildings.

It wasn't long before he sensed that the huntsmen had found him again.

A huntsman's car, prowling through the dimly lit streets, smelling him out from a hundred thousand others. A gradual sense of activity in the neighborhood, foreign to the sleeping people in the buildings. Somebody he could hear walking a few blocks away, the slamming of a car door to let somebody out just around the corner.

The baying of the five hundred hounds.

He quit using the open street and clung close to the shadowy buildings, silently feeling his way through the alleys and the back yards. Near one of the buildings, a foot away from where he was walking, a small spot on the sidewalk hissed and grew red, then crumbled into powder.

A burn from a Williams, from somebody hiding across the street—still playing with him, still toying. He caught his breath and ran, leaping a wire fence and padding silently through the yards. The moon helped him for a minute and then it disappeared behind a cloud and he was in pitch blackness.

Something felt soft beneath his foot, and he stumbled to the ground. There was a flash of light as somebody lit a match a few feet away and he found himself staring into a startled face, whose expression quickly smoothed out to one of dangerous blankness.

The face said: "You don't belong here. You better move." There was a *click* from a piece of plastic the man held in his hand and the plastic sprouted a six-inch length of steel blade. "Now."

Black felt like the blood was going to ooze out his shoes and then he was up and away, running. Running.

"What'll you have?"

"Something to drink."

"We don't serve drinks here—only coffee."

Black had the feeling that the counterman would be just as happy if he got up and left.

"Coffee, then. That's what I meant."

"Anything else?"

Black stared at the menu through blood-shot eyes and picked something else to go with the dark, bitter tasting brew that was called coffee.

It was getting near morning and the small lunch counter was filling up with people on their way to work. They took fleeting notice of his dirty and torn clothing and the stubble on his tired face, and then turned back to their morning coffee and eggs with an outward show of disinterest that masked the curiosity within.

Early morning felt good, Black thought—the sun and the cool air, rolling up the night like a window shade. It felt even better to be in the lunch counter, with the sunlight streaming through the windows and highlighting the red-checked tablecloths, and the pleasant clatter of spoons clanking against cups and the sleepy mumble of early morning conversation.

He downed the last of the coffee and finished off the eggs, using a gray piece of bread to sponge up the yolk. Not so long ago, he thought with a sudden longing, mornings had been different. You were awakened along with a few hundred others, at the crack of dawn. You showered and dressed with military precision and left the barracks a half hour later for the antiseptic dining hall, where the food was plain but prepared under sanitary conditions and scientifically calculated to contain the minimum for the day in protein and carbohydrates and vitamins.

For a brief second he worried about the caloric and mineral content of what he was eating at the moment, then laughed grimly to him-

self and dismissed it.

He had another cup of the bitter coffee and casually inspected the people around him. They seemed to come in all shapes and sizes and wore a wide variety of garments, as wide a variety as the people in the wine shops the other night. Some had brief cases and were rather formally dressed; others had on old and patched clothing and were obviously going to work in factories.

No standardization, he thought somewhat distastefully, a simple sort of anarchy. Something like the rankanfilers in his own time.

He swallowed the last dregs of his coffee and got to his feet to pay the counterman. Enough people were on the streets to cover his movements; it would be safe to leave.

At the cash register, the counterman ticked off the items on his breakfast check, then punched the register and handed him a few coins in change.

Just before he turned away, the counterman lowered his voice and said with a sly smile: "You're too easy a mark, Black. Hunter Reed's going to be disappointed. Maybe you ought to start running again, hm-m-m?"

III.

*He does not sit with silent men
Who watch him night and day;
Who watch him when he tries to
weep
And when he tries to pray,*

*Who watch him lest himself should
rob*

The prison of its prey.

"The Ballad of Reading Gaol,"

Oscar Wilde

He had been herded, he thought grimly. Herded to the south side where Reed's men had kept contact with him every minute of the time, playing with him, playing the bitter game of wearing him down, tiring him out. They wouldn't close in for the kill until the last period, most likely, when he was fatigued from lack of sleep and jittery with the knowledge that his enemies were invincible. Then they would sit back and watch him blunder and stumble in the web.

The streets were alive with people, all of them too sleepy or too busy among themselves to notice him. For the moment, he had achieved the blessed sanctuary of anonymity. He caught one of the rumbling streetcars and rode a few blocks to a crowded intersection, then transferred to a bus and rode a few more. Inside of an hour he had left behind him a bewildering maze of transfers and cut backs and parallel riding. He felt reasonably certain that he had lost himself in the crowds, that nobody had been able to follow him.

There was a residential section not far from the heart of the city and he walked through it rather slowly, feeling momentarily safe from the perils of the hunt. It was a well kept up neighborhood, with

neat looking, brightly painted bungalows and thick, green lawns. He looked at the homes with a touch of envy. They weren't highly standardized and were hardly what you would call functional, but there was still something bright and appealing about them—a something, he decided, that his own time lacked.

It was after breakfast and housewives were hanging out the wash while husbands of the executive stripe were just heading to work. After them came the sharp-eyed children on roller skates, roaring down the sidewalk to school—little girls with bright, print dresses and boys with worn corduroys and battered schoolbooks.

Black watched them curiously. There didn't seem to be any order to it. No marching, no uniforms, no squeaky voiced squad leader shrilling commands.

That was it, that's what made it seem so strange. There was no order to the society, no purpose, no goal. The people were too—individualistic.

The crisp newness of the neighborhood gradually faded to a sooty, run-down district of old houses and that gave way to a manufacturing belt around the center of the city.

With a start, he recognized where he was. Just beyond lay the park and the court and the railroad station. A different station, now, than the deserted one of the previous night. It was humming with activity, disgorging steady streams of people

on their way to work or to a day's shopping. It was the time of day when the commuters come to town.

The station, he decided, would be his hiding place for the next few hours.

The voices of the twentieth century.

A harsh voice. "*Gitcher morning paper, allabout the war! Paper, mister?*"

"No thanks. I—"

A briskly professional voice: *This is a special for commuters only, this morning. A box of Mrs. Borrowman's chocolates to take to the girls at the office or to the wife at home. What about you, sir?*"

It took him a moment to understand that a brusque nod was sufficient—or you could ignore them altogether.

A hoarse, blind voice with a mechanical throat: "*The Ashland Limited for Woodstock, Crystal Lake, Beloit, Minneapolis and St. Paul now ready on Track 6. All aboard!*"

He bought a paper and settled on one of the hard wooden benches. It would be a good idea to buy a ticket to some city—any city—and leave Reed and his huntsmen far behind. But Reed would have the stations covered; that would be the first thing to occur to him. The train stations and the bus depots and the air terminals. They would all be watched by alert, eager huntsmen, even now he was running something of a risk by being in the station, but the attention of any possible pur-

suers was most likely glued on the ticket windows, watching those who bought tickets out of the city.

His eyes left the paper for a moment and darted about the terminal. You could play a game and try and pick out Reed's men—

Like the solitary man at the lunch counter, watching the terminal in the big mirror behind the automatic coffee urns.

Or maybe not. He looked too tired, his eyes were too red. Probably a nightshift worker catching a bite before going home.

Or perhaps the woman waiting by a pillar, looking in her compact mirror and repairing her face.

A minute later she picked up her baggage and disappeared through one of the gates, when her train time was announced over a loud-speaker.

Black could feel the nervousness build up within him. It would take so little to walk up to the window, push some money through the wire wicket opening, and buy his freedom out of the city.

Perhaps—

The man in brown a few benches down!

Black could have sworn he was a huntsman, but the man suddenly got up and walked to the gate where people were streaming out. He cut into the crowd and took a suitcase from a rather plump, elderly woman, and the two of them left the station arm in arm.

Black was on his feet, clutching his wallet in sweating hands, walk-

ing towards the ticket window.

And then his heart started a frantic triple beat and his courage trickled out of him. Reed had followed his every move so far, there was no reason to imagine that he would have passed up the station. He couldn't afford to fool himself. To buy a ticket now would make for certain detection.

He walked into the men's washroom instead.

One of the washbowls was free and he sloshed his face with cold water, then inspected himself in the mirror. His eyes were red-rimmed from lack of sleep and a light, black stubble had sprouted on his face. There was a drugstore in the station proper and he went out and bought himself a shaving kit, then erased the beard.

He felt a little cleaner after that, but the facilities of the washroom were limited and he couldn't take a shower. And he smelled. His clothes were full of his own body odor, a sure clue to his identity for any sniffer.

He fumbled around his pockets and came out with a bottle that had been in the handbag he had stolen in the wine shop. He uncorked the top and smelled it. The oily liquid inside had a rather pleasing odor, one that was strong and would probably be lasting. He spilled some on his hands and rubbed it on his face, and ran some through his hair. It was bound to baffle any of the mechanical aids that Reed might have.

He had just finished drying his hands when a man in a blue uniform—he had learned that such uniforms designated men of the local police department—came into the washroom and stopped short, then turned a leering face towards him.

"Hey, Joe, c'mere," he said over his shoulder. In a moment he was joined by another blue uniform. One of them came over and slapped Black sharply in the face.

"Just like spring, isn't it? But don't you think it's kinda strong?"

Black reddened. He could handle the both of them, but the uniform denoted authority and it was best not to antagonize it. He had enough difficulties as it was.

The other blue uniform suddenly stepped behind him, caught his arm, and twisted it sharply.

"You'll start no trouble here. On your way!"

It occurred to Black that in some way he had violated a taboo of the civilization.

"But I didn't—"

A sharper twist and a shoving motion towards the outside. "Yeah, we know. Beat it, bum!"

Once outside, Black's mind felt twisted with a curious, helpless anger. He had been a citizen once, with all the rights and prerogatives of one.

It was a new experience to be treated as . . . as—

Sundown.

An eternity of walking the streets, dodging trackers, and hiding in

ASTOUNDING SCIENCE-FICTION

theaters and libraries—any place where a crowd would serve as a cover.

Sundown. An hour's rest before the fear would be on him again and he would be the hare at the head of the chase, dodging through the warrens of the city, desperately trying to find a hole to hide in.

Sundown. The end of the first period of the hunt. And in a small way, even if only by virtue of Reed's leniency, it was a triumph for him because he was still alive.

He opened the door of the hotel room and locked it carefully behind him.

"Five minutes sooner, David, and you would have been a fraction of a second too early."

Reed was sitting on the bed, holding a Williams in his hand. He looked disappointed.

Black tried to look as calm as he could. "But I got here too late, didn't I?"

Reed cocked the Williams and pointed it at his chest. "I'm not so sure—" He was tired, but not too tired to whirl to the window and breathe an involuntary sigh of relief at the steady blackness outside.

Reed laughed and put the pistol away. "A little jumpy, aren't you? But that will wear off sooner or later. Exhaustion will conquer your nerves." He looked amused. "You've had quite a time of it, haven't you?"

Black wanted to remain silent but he had to ask the question that was hammering at the back of his mind.

"Did the State—" he began

stiffly.

"Grant you a reprieve?" Reed finished. He leaned back and roared. "Don't worry, David, if they do, I'll be the first to let you know."

Black fell silent.

"I frankly didn't think you would jump the railing at the station," Reed continued, "but I already had men planted along that escape route, in case you did. Nasty section of the city you had to go through there. As a former citizen, you have my sympathy. It isn't easy to mingle with people like that."

Silence. The muted noises from outside the window, the drip of water in the bathroom.

"You looked quite haggard at the lunch counter, and I don't think you enjoyed your coffee and eggs too well." A slow smile. "I was in a business suit then, three stools down. We lost you on the street cars and buses and picked you up at the railroad station. You did the wise thing in not trying to leave the city; we couldn't have afforded that."

The slow crawl of a fly on the night table was fascinating. Black let it absorb his interest and Reed's words seemed to come from far away.

"I'm a little sorry about the incident in the station, too. It would have worked out quite well, by the way, in fooling the sniffers but you would have drawn considerable attention to yourself in another sense. It's always best to learn the customs and taboos of a civilization as soon as possible, David; they save you

an endless amount of trouble."

The bed looked soft and inviting. He felt like he wanted to drown in sleep.

Reed was watching closely. "You drew first blood today, David, but you'll have to do better than that. I had frankly expected more of you. You used to enjoy quite a reputation as a hunter yourself, you know." He was lost in thought for a moment. "If you had come back early tonight, I think I would have ended the game then."

Reed waited for a reaction but didn't seem too disappointed that there wasn't one.

"As tired as you are," he mused, "it must have been a great temptation to come back here just . . . a . . . few . . . seconds . . . early."

Elizabeth Smith wondered when the time would come that she had had enough. When she no longer would be able to sit there calmly and teach rows of insufferable little children, all sitting stiffly in their chairs, all dressed in identical little uniforms, and all with the same intent expression on their faces. Rapturous little sponges, sopping up knowledge because the State expected every school child to do its duty.

Some day the endless parade of faces that shone with a military immaculateness, the careful restrained play, and the adult manner of the children-who-weren't-children would become too much, and she would simply stand up and walk

out, never to come back. Not even to her part in the revolution.

But she didn't mean that, she thought hastily. The only chance that the children would become children again some day lay with her and John and the others.

She sighed and finished her lecture. "There will be exactly three minutes for a question period," she said briskly. "Any questions?"

A hand shot up in the second row.

"What are the fundamental differences between the citizens and the rankanfilers?" a childish treble asked solemnly.

The boy could be needling her, she thought, or it could be a planted question. Or it might even be a perfectly serious one.

"You were taught those differences in elementary," she said tartly. "It will pay you not to forget. A citizen, by reason of birth and breeding, is superior to a rankanfiler in both blood lines and native mental ability."

The boy then asked reluctantly: "What is the explanation for honorary citizens, then, who were not born to it?"

She must remember his name, she thought. In a few years he would be excellent material. He seemed capable of original thought, instead of the mere parroting that so often passed for thought.

She hesitated just long enough, to plant the seed of doubt in his mind, before she answered. "The State is perfectly capable of granting its own

mark of superiority," she answered coldly. The answer sounded authoritative but meant exactly nothing. "That ends the questioning period, class is dismissed."

They filed out of the room with military precision. She got her books together and hustled down the corridor to the automatic lift. She had to hurry, to make good use of the fifteen minutes between classes.

She got out on the 110th floor and hurried down the corridor to a plainly marked door. She hesitated a moment, then pressed her palm to the resilient surface of the door for recognition purposes.

"Name, please," a mechanical voice sounded.

"Elizabeth Smith," she answered, "to see John Doe."

The door swung silently open and she entered. The man behind the desk in the room greeted her warmly. He was a tall man, on the gangly side, with a thin, ascetic face and the heavy-lensed glasses of a scholar.

"Is the room screened?" she asked.

The man nodded. "Of course." They made themselves comfortable on the small, utilitarian couch by the open window.

"How's the revolution going, John?" she began.

He grimaced. "Slowly, as to be expected. It's almost more of an evolution, than a revolution. Don't mistake me, though, I'm not advocating open revolt."

She laughed grimly. "You don't revolt that way against a culture as militaristic as this one. Sometimes I almost think we ought to let everything go and let the citizens die out in a thousand years from lack of breeding."

"Like the Spartans of ancient Greece, I suppose?"

"Well, why not?" she asked defensively.

"There's nothing basically wrong with the citizens as a class, Beth, you know that. It's the system that's all wrong, it's the system that has to be destroyed."

"Oh, I know that," she said moodily. "Sometimes, though, well . . . it all seems so futile."

He stood up and looked out of the window, his hands clasped behind him. "We make haste slowly, Beth. It's the best way." He changed the subject. "What about Black?"

"I took the time car back to the barbarian period he was stranded in and made contact with him in a small wine shop. He wasn't, of course, aware of my identity. I planted a statement about minority groups and then tempted him with the money in my handbag. Later that evening, he stole the handbag. There were two citizens in the shop observing Black, and he lured one of them away. Husband and wife team. I kept the wife from following Black or notifying Hunter Reed."

He nodded, pleased. "How do you think he'll come out?"

"I don't know," she said reluc-

tantly. "It is true that he objected to the hunts, which made him worth our attention in the first place. But I'm not at all sure that he disagrees with the State itself as a governing body or with its other policies. At present, I think he's living in hopes of a government reprieve."

"A rather foolish hope."

"Perhaps, with contact with all classes in the civilization that he's in, he'll change."

Her companion seemed absorbed in the coming and going of the 'copters and rockets over the city and kept silent.

"Do you have any more news on Black, John?" she asked finally.

He turned to face her, smiling somewhat wanly. "He cuts quite a handsome figure, doesn't he, Beth? Broad shoulders, athletic. Not the pale, scholarly sort like myself."

"I am interested in neither his broad shoulders nor his engaging smile, but rather in what ways he could help us," she said coldly.

He smiled more naturally. "The State has labored so long to build up its superiority-inferiority myth that it sometimes crops out even on me—the stress they lay on the physical side."

"What about Black?" she persisted.

"We managed to keep a man on Black all during the night and most of the day. But it wasn't easy and it was highly dangerous. Our own men and the huntsmen were rubbing elbows all the time, though fortu-

nately without discovery on *their* part. Our past experience gave us an edge in that respect."

"What did Black do after I left him?"

"What they all do, at first. Fled through all the sections of the city, devoting most of his energy to changing his locale once he suspected that he had been spotted. And as you know, that's a tiring and essentially useless procedure. Reed could have had him at any point during the hunt, though he apparently didn't prefer to do so. From our own psychological analysis of Reed, it appears statistically probable that Black will be spared until the last period." He shook his head doubtfully. "Whether Black survives or not depends primarily on himself."

"What do you think of his value to us?"

"Black, is, of course, the first citizen to be condemned to the hunts as a quarry—a sure sign of the State's inward decay, by the way—and would be quite valuable if he threw in his lot with us. But bear in mind that he would be valuable only if he recanted the theories of the State and was sincere in his recanting. And considering that the State has molded his mind in every line from sex to social structure since birth, I doubt very much that Black will suddenly discard those teachings now."

"I still think he's worth our surveillance," she said. "The situation that he's in, no reprieve from the State, and what we know is Reed's

own suppressed brutality may shatter his illusions. And a study of the civilization he's now in may help, too. He'll *have* to make a forced study of it if he hopes to survive."

He shrugged. "We'll keep men on him and see what we can do to help. You can make contact with him again and certify his opinion on the State and if there's any hope for him." He paused. "I trust you remember," he said thinly, "that one traitor could betray the lot of us."

"I could hardly forget that. My own life would be forfeit as much as yours." Her face softened a bit and she came over and stood by the window with him, looking out at the gray countryside dotted with the military barracks of the citizens and

the hovels of the rankanfilers.

"There's a student in one of my classes," she said, "who might bear watching. If we started indoctrination now, I think he would be quite useful later on."

"What's his name?"

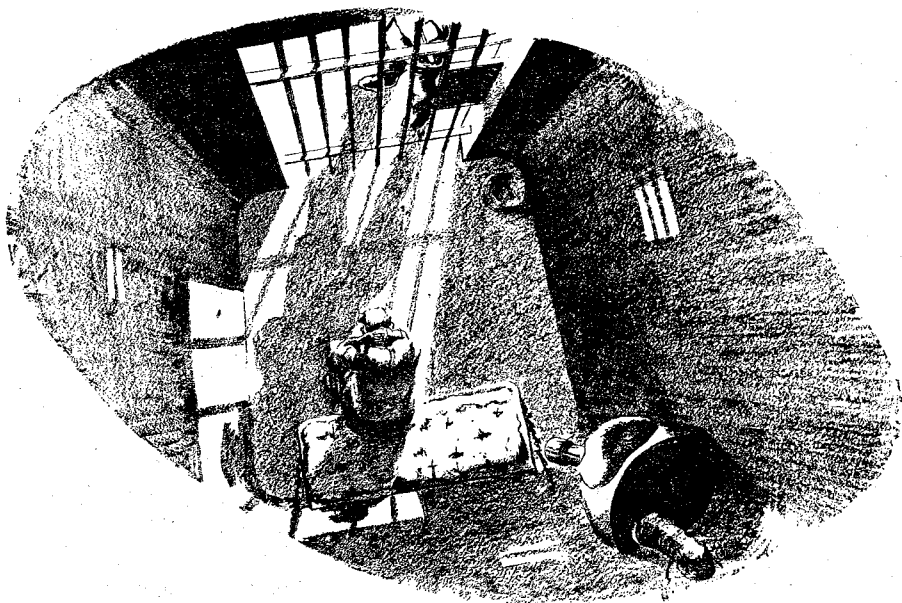
"Richard Roe," she said.

"It's a good citizen name," he said, smiling. "But which Richard Roe is it?"

"The one with the fat face and the cowlick that won't stay down."

He sobered. "If he's got a curious mind, he'll pay heavily for it before everything is said and done."

She turned from the window, bitter. "How did the State ever become father and mother and lover and jailer?"



"It's a long story," he answered slowly, gently erasing the wrinkles in her forehead with the ball of his thumb. "Some day I'll tell you, Beth."

IV.

*But they were in their first youth.
It is not the same. You, who are
young, remember that youth dies.*

"Short Ode,"

by Stephen Vincent Benet

The night was cool and a fine misty rain was falling, giving the street lamps a half-halo effect. Most of the evening crowd had been driven indoors and those who hadn't were huddled under awnings and overhangs, impassively waiting for the drizzle to end.

Black threaded his way from group to group, dodging as much of the rain as he could, well aware that the thinned out crowds made it that much more dangerous for himself; the veldt was always more dangerous to hide in than the jungle itself.

His muscles were aching and his head felt heavy, his eyelids a weight pressing down toward his chin. He was sleepy—and yet he didn't dare think about it. The more he longed for sleep, the more tired he became which meant the more he longed for sleep. He had purchased some caffeine tablets at a drugstore but they didn't help much. The best insomnia-producing agent, he reflected, was to concentrate on his own immediate danger.

He hadn't given Reed much difficulty, he thought wryly. And if he had shown up at the hotel early, that would have been the end of the game. It would have been too good a story for Reed to tell—how he had merely waited for the quarry to come to him. As easy as the proverbial shooting of ducks in a pond.

The rain was coming down harder now, in big drops that sounded like hail on the wet awnings. The streets and the sidewalks were running with streams of water that gushed over the walks and gurgled into the gutters at the corners. It was a drenching night, the pavement a glistening, reflecting river.

Except for the little dry spots about the size of a small coin that appeared on the walk in front of him like spots before his eyes. Small dry spots that kept pace with him and emitted little puffs of powdered cement when they appeared. Tiny little dry spots on the soaked pavement that told him the game had started all over again.

He wouldn't be stampeded this time, he thought grimly. They wanted to see him run, to see him dodge and twist through the city. He'd be a moving target then, one that might be hard to hit but one they wouldn't lose track of either.

He gave a sideward glance to one of the store windows and caught a glimpse of his tracker half a block behind. From what he could see, his tracker was a young man with a rubberized overcoat pulled up around his ears and a gray felt hat

shadowing his face.

The young, foolhardy kind, Black thought. The type he had been once, the type you could always count on to do something foolish.

He crossed over a block and stopped in front of a theater, his actions obvious. He paid for a ticket and found a pair of seats in the middle of an aisle, halfway down. He settled in one and waited patiently for the youthful huntsman to take the other. Despite the advertised air-conditioning, the moist odor of the people jammed into the auditorium lay like a light fog around him, sufficiently confusing for the sniffers. And there were no aisle seats available from which anybody could watch and be sure of getting out immediately if Black should start to leave.

The huntsman had no choice but to take the seat next to him or risk losing his quarry.

Black allowed his mind to wander for a fraction of a second, watching the antics of the shadows on the lighted screen, and then snapped back to a alertness as seats were pushed back along the aisle to let a newcomer in.

He waited until the newcomer had shed his raincoat and hat and had them on his lap, momentarily encumbering his hands. Then Black jammed his elbow sharply outward and down. It was all very silently done; there was no noise except for the tiny pop of vacuum tubes in the miniature transceiver strapped to the huntsman's side.

The youth hesitated for the barest fraction of a second, inhibited against violence by the presence of the crowd, and Black's hand snaked inside his raincoat and relieved him of his Williams.

"You're a fool," Black whispered softly in the darkness.

The young huntsman seemed about to say something, then clamped his mouth tightly shut. Black knew what his thoughts were: At first, an initial agonizing dismay to realize that he had failed in his detail. And then—

"You won't get away," the young man whispered back.

That was the secondary reaction. Even when you had lost faith in yourself, you still retained it in the larger organization of the hunt, believing that you and your mission would be avenged by others.

"We're leaving here," Black said quietly. "You first, I'll follow. And I won't hesitate to kill you if I think it necessary."

How long had it been, he wondered, since he had been the same type of overeager kid? Forty-eight hours, perhaps?

He felt that he had aged quite a bit since then.

The rain had stopped except for a slight misting and people were out on the walks once again. The air smelled cool and sweet and the light from the neon signs seemed warm and friendly.

He glanced thoughtfully at his captive. He was young, with a stern,

face and a stiff upper lip that betrayed only a slight tremble.

"Why did you let me know you were following me?" Black asked. He already knew the answer. *To see you run, of course!*

"Rules forbid the disclosing of information to quarry," the young man recited stiffly, staring straight ahead.

"I see you remember your hunting lessons," Black commented dryly. "Very commendable." He added, in a half friendly fashion: "It wasn't too long ago that I was a hunter myself."

No answer to that, except possibly the slightest motion of the lip, curling in contempt. Black reddened slightly. It was probably best to ask it baldly.

"I understand the State was going to review my case," he said stiffly. "I am interested in the outcome." The huntsman would probably bargain with him about the information, or perhaps even lie about it, but he had to risk it.

His captive smiled, enjoying a vast secret amusement at Black's expense. He said nothing. From his reaction, Black could guess what had happened but there was still a tiny shred of doubt. He had to hear it from the man's own lips.

"You will tell me what you know about it immediately, or you'll die right now," Black said quietly, the slightest tremble in his voice. He meant what he said and his captive's smile quickly faded.

"Your case was reviewed by the

State and the decision was given that, in view of the facts, your request for review and reprieve was insolent presumption coming from a convicted traitor. The sentence stands."

Black felt like he wanted to go away some place and become quietly sick. The carpet had just been pulled out from under him, his last hope had vanished. He was strictly on his own, like any other quarry, and his probable end, as he saw it, would be the same.

"It was a stupid thing to do, to let me know you were following me," he said, changing the subject. "The State should have briefed you beforehand. But then, the State makes mistakes, doesn't it?"

Even as he said it, he knew it was a childish thing to do. A sudden desire to discredit the State because it had failed to act as he had wanted it to.

"The State is incapable of error," his captive said dogmatically.

And if he believed that implicitly, Black thought frantically, he would have to believe in his own guilt of having been a traitor to it.

"Is the State the only agency that can decide what is right and what is wrong?"

"The State knows best."

Black could feel the despair growing in him.

"Do you approve of the hunts?"

"It is the method approved by the State for the punishment of criminals; a fair method decided upon by a benevolent State."

Black took another sideward glance. The handsome face of the true believer, he thought, glorying in his own confidence in the State.

By now they had walked several blocks in an aimless direction, and the crowds had again thinned out. They were walking by the mouth of an alley when Black's captive suddenly turned and lashed out with his foot. As Black tripped and fell the kid chopped down with the side of his hand, catching Black on the back of the head. Things blurred for a moment, and then the youth was dashing up the alley.

He couldn't let him get away, Black thought dimly, or Reed would be down on him in no time. He cocked his Williams and pressed the silent trigger. Far down the alley there was a sudden scream and a dull sound as something stumbled and hit the cement.

There was no end to it, Black thought sickly. No end to the hunts, no end to the killing, no end to the fear, carefully sponsored and nurtured by the State.

He suddenly felt horribly in need of somebody to convince him that the State was wrong and he was right, that the State was corrupt and he was pure, that the State had betrayed his trust and he had merely kept faith with himself.

Another night of hide and seek in the slums and back alleys of the city, he thought. A more successful night as huntsmen had been able to locate him only once—and that to

their sorrow. He had drawn blood twice again and with it a slight measure of confidence in his own ability to outwit his pursuers.

Now he had another day to face. The days weren't so bad, of course, far better than the terror-filled nights when every noise was a menace and every shadow a threat. And there was something cleaner, less frightening, about the possibility of dying during the day.

He caught a glimpse of himself in a puddle on the walk and winced. The neat, chiseled look that citizens usually had was gone. His face was puffy and strained looking and there was an untidy morning stubble fringing his jaw. What was worse, though it didn't show directly, was the sheer exhaustion and weariness that was slowly sapping his will to resist.

He would be fortunate, he realized indifferently, if he could last the entire three days.

It was near noon when he tired of mingling with the crowds on the walks and turned into a museum. He found an empty bench halfway down a marble hall and eased himself into it, letting the crowd swirl past him. It was quiet, except for the slight murmuring of the crowd, and he gradually let his surroundings absorb the greater part of his interest, leaving only a picket guard in his mind to watch out for huntsmen.

He looked around, slightly puzzled. There didn't seem to be any exhibits of any kind. The people.

apparently, were only interested in the decorations on the wall. But of scientific exhibits, the usual dazzlingly smooth motions of shining machines and the soft oiled sounds of mechanical monsters, there was none.

He shouldn't linger too long, he thought cautiously, but the people in the museum intrigued him. He watched them, trying to figure out why it was they came here, and reluctantly came to the conclusion that it was indeed the decorations on the wall that had drawn them.

He stood up and walked over to inspect one. It was a painting showing two men in trunks, apparently fighting in some kind of armory, with a huge crowd eagerly looking on. Degenerate art, of course, something the State inveighed against but which he had never seen. Rather crudely done, too—though the coloring was striking—and not nearly so true to life as a photograph would be.

But still, perhaps it wasn't supposed to be. Despite the crude workmanship, the painting conveyed a certain feeling, a certain atmosphere.

He walked down the hall inspecting the paintings with a mounting feeling of excitement. At the end of the hall was a court, filled with somber statuary. The one nearest to him was a larger-than-life portrayal of a man with sandals and what looked like a sheet draped over his body. A small card near the base of the statue identified it as being of one "Sophocles—Greek Tragic

Poet."

"It's quite good, isn't it?" a voice said. "It sort of gives you a feeling of . . . of majesty."

He almost forgot himself and let his hand dart for his Williams, then he backed cautiously away. She didn't, however, have the citizen stamp about her and he relaxed. Her hair was swept back into a severe bun while a pair of unadorned, horn-rimmed glasses kept guard on the bridge of her nose. A spinster type, Black thought, who spent her free time in the libraries and museums of the city.

"I've never seen anything like it," he said huskily. "I had thought at first that he must have been a statesman or a general."

The eyes behind the glasses looked at him in frosty amusement. "Don't you think that a poet should be immortalized in stone?"

"But they're . . . they're so unimportant."

She laughed. "The poets will live longer than the politicians, Son." They walked over to another one, which Black gaped at in open admiration.

"Haven't you been to an art museum before?" she asked finally, as Black lingered by the sculpture.

"We don't have them in my country," he explained. He could, he thought waste an hour or so. And there were many avenues of escape from the building.

"I see," she said, drawing the wrong conclusions from his trace of an accent. "You're a D.P., aren't

you?"

"D.P.?"

"Displaced Person—a refugee from one of the nations over *there*."

He smiled slightly. "I suppose you could say so."

She hesitated a moment, thinking of the appropriate thing to do. "I wouldn't mind showing you around, if you would care to see more. I think you get more out of it if you have somebody to act as a guide."

He was running a risk, Black thought calculatingly. But this was too fascinating a phase of culture, something he had never seen before. And he was probably as safe playing the part of a spectator in a museum as he would be on the walks outside.

Two hours later his guide had to leave.

"You see," she said, pulling on a pair of light cotton gloves, "art isn't so much a pictorial representation of an event or people, as a photograph is, but more of the capture of emotion in oils or marble." She paused and looked at him shrewdly. "I'll bet you're not very familiar with poetry or literature, either, are you? No matter, you'll have to dig that out on your own, I don't have the time to take you through a library." She held out her hand to him in her brisk, schoolteacherish fashion. "Good luck."

At the entrance to the museum, Elizabeth Smith glanced back at him for a moment. Black was still standing where she had left him, studying his hands with a curious

and detached interest.

V.

*"We are all good citizens here.
We believe in the Perfect State."*

"Litany for Dictatorships,"

Stephen Vincent Benet.

The department store had been an inspiration.

It was crowded with milling people—which made it an excellent hiding place—and it was very possibly the best place to study the civilization he was in. You could learn an enormous amount from the products a culture used and the range and variety of them. And this particular culture provided a fantastic number of products, enough to stagger the imagination.

He had worked his way from a main floor that dealt primarily with men's clothing and stationery to a second floor that displayed feminine undergarments—mildly shocking to him—and from there to floors that specialized in books and home furnishings and kitchen supplies. The very top floor featured radios and rugs and a department for small children. The latter carried such unusual items as dolls and "cowboy suits" along with the more traditional, at least in his own time, tin soldiers and toy tanks.

It was near closing time and the floors had gradually emptied of people. It was time to leave, he thought wearily, time to leave and face the last night of fear and

horror.

He pressed the button on the elevator shaft, as he had seen others do, and frowned slightly when the dial above the door showed no sign of moving, to indicate the elevator was on its way up.

He swore softly, pressing the button again. No results. It came to him with a numbed surprise that it wasn't closing time, it was *past* closing time, that somehow the clerks had missed him when they had left and that his own absorbed interest in the toy section had made him forget the time.

He was locked in, alone.

The lights dimmed and went out and it became a semidusk on the floor. There wasn't any sense waiting for an elevator that wouldn't come, so he turned away and wandered back to the main display space. It was just as he had left it, except for the silence. You could almost hear the dust settle on the displays. The tin soldiers and the toy tanks were still keeping watch over the fuzzy haired dolls, and the button-eyed toy bears were still gazing owlishly off into space.

Black stared at them in the grayish light, their lack of animation emphasizing his loneliness.

"You won't leave here alive, David," one of the fuzzy haired dolls said.

"You're a traitor against the State and you'll die for it," another lisped.

"One burn, right between the eyes," one of the bears shrilled.

Black could feel his scalp draw taut and his heart rise in his throat. His hand darted towards his Williams and he sprayed the entire counter, leaving it a smoking mass of blackened wood and charred toys.

"You shouldn't have done that, David." A huge peppermint stick man at the entrance of the toy department a few feet away had his say in a sticky tone of voice.

"Yes, indeed, you certainly shouldn't have, it will go hard on you now," an erector set robot said.

"You won't leave here alive, David," one of the charred lumps on the blackened counter repeated.

"You're a traitor against the State and you'll die for it," another lump gurgled.

"One burn, right between the eyes," a singed bear said, still looking owlishly at him with little tears of melted plastic for eyes.

"Yes indeed," the erector set robot began, and ground into action, heading towards him in creaking little steps.

Black left it a burned and twisted mass of miniature girders and fled, his heart pumping pure fear. Three floors lower he stopped and glanced frantically around. This particular floor featured home furnishings and kitchen supplies and there were trussed up rolls of linoleum at one end. He ducked low and made it down to that end, then slid behind the rolls.

He crouched there for what seemed hours, hardly daring to

breathe, just listening for any noises and letting the clammy sweat gather under his arms and trickle down his back. His aching muscles had just begun to relax when the expected noise came.

"I can burn those rolls down little by little, David, until I flush you into the open." The voice came from behind a lounge chair arrangement. Black burned the chairs and dodged over behind a refrigerator display.

Reed's voice laughed back at him. "You'll have to give me more credit than that, David. My voice is no indication of where I am."

Black didn't bother to reply but cautiously crept a little farther from the linoleum.

"Do you want me to end it now, David, or shall we prolong it a bit longer?"

No answer.

There was a blinding light in front of him and the linoleum rolls started to smoke and burn. Reed was using a wide angle aperture on his Williams, fanning it in a blinding flare of light that acted as an effective cover for the source.

Black crept farther along the side of the room, then lay on his stomach and started to burn the legs of a table load of china several rows down. He worked cautiously, charring the bottom half of the legs without causing any suspicious smoke. The table suddenly sagged and spilled its load of china on the floor.

As expected, Reed automatically burned the spot, but the shot was

a side shot from Black's angle and he could see the source of the beam. He took careful aim and fired at Reed's expected position. There was a sudden cry of anguish, though not—disappointingly enough—in Reed's voice, and Black took advantage of the opportunity to make a dash for the escalators and thunder down them again. Behind him came the crackle of fire as the inflammables on the floor he had just left caught fire.

He paused on the ground floor and strained his ears. There was a soft creaking on the escalator a floor or two above him as somebody silently made their way down. Reed had undoubtedly not been alone; there were huntsmen with him. And it was a huntsman he had hit in the home furnishings department—Reed would never have made a blunder like that.

It was getting darker inside the store, more filled with shadows. Black drew himself up against a far wall and waited. The hunt wouldn't last much longer,* he thought painfully, but he would still try his best to escape, more from force of habit than anything else. He felt sick and his sides and head were aching with pain.

The bottom of the escalator was practically hidden from sight in the shadowy darkness and it would be difficult to tell when somebody came down it, except by listening as carefully as he could and firing at anything that moved.

Sweat from his forehead crept

into the corner of his eyes and stung them. He blinked and cocked his ears again but heard only the beating of his heart, loud enough, he would have sworn, to give him away.

There was a slight movement at the escalator stairs and he fired. An answering beam smoked past his shoulder and ignited some bolts of fabric on a counter just behind him, and he moved hurriedly away, seeking cover behind some displays.

From somewhere in the store came the sound of the click of a knob turning in a door. Reinforcements were arriving for Reed's side, Black thought; the hounds were coming to tree him.

He moved closer to an alley exit of doubled glass doors. Closing time had been an hour ago and there wasn't any doubt that now was the last chance he'd have to leave. He turned his body sideways and hunched his shoulders, then hurled himself against the glass.

He was through in a shower of splinters and racing down the alley to temporary freedom.

But only temporary, he thought, for behind him he could hear the padding of other feet in the alley as the hounds came in full but silent cry.

Back on the streets again, in the neon-lighted wilderness. The glare and burn of the winking signs staring down at him, advising him to buy a hundred and one products from automobiles to mouthwash;

the displays of brazen women tempting him to try a certain brand of tobacco; the people, smug and fat, wandering lazily arm in arm down the street, from one wine shop to another; the shrill music, piped out to the loud-speakers hanging over the sidewalks, the jazzy jungle background noise.

And which of the people on the walk were genuine and which were a clever imitation?

Reed's men had finally succeeded in doing what they set out to do, he thought; to wear him down until he blundered and stumbled in their web. He was too tired to think logically about escape and his efforts were probably in vain anyway.

He headed towards the south side of the business district again, the section of the honkatons and the flesh shows, the pawnshops and the little stores that sold good-luck charms and magic tricks. Then some inner sense warned him that he couldn't hope to evade them in that district, that it would be, instead, an ideal spot to kill him. One more murder in a district where they weren't at all uncommon. He headed out towards the lake.

A few blocks from the business district he knew it was no use.

Cars drove up to each end of the block he was on and small groups of men who had just turned the corner drifted up the walk after him. Black caught a ragged breath and turned into the building he was walking by, some sort of hotel by the looks of it.

The lobby, dark and musty smell-

ing, was furnished with worn rugs and leather-covered furniture with cigarette holes in the leather. The floor was rubber-tiled with wood showing through some of the worn tiles, and there were little notices and posters on the lobby walls, some advertising dances and others listing the various churches throughout the city. A man's hotel, Black thought, you couldn't mistake it.

The clerk at the desk paid no attention to him and he turned down a flight of stairs that led to the basement. There were exercise rooms and athletic courts in the basement but these had been emptied for the evening. Black looked them over quickly, then fumbled for the light switch in another darkened room. He couldn't find it, hesitated a moment, and then advanced in the darkness when he heard feet on the stairs outside.

He had taken but three steps on a cold, tiled floor when he felt nothing beneath one foot, teetered for the moment on the edge of something, and then plunged into water that quickly closed over his gasping head.

A rhythmic pressure on his sides forced water out and made him choke for air on the intake. He was sick for a bit and then they had him on his feet, one holding him on each side while the third lightly slapped his face.

He blinked his eyes and opened them, to stare full into Reed's thin, smiling face. There was a light

somewhere in front of him so all he could see was Reed and nobody else; the others fuzzed into blackness around the edges of his vision.

It must have been only a few seconds that he was in the pool, Black thought. They had fished him out pretty quick.

"You almost cheated the State of its quarry," Reed said pleasantly.

"Nobody ever succeeds in cheating the State of anything," Black said dully.

A hand came out of nowhere and slapped across his mouth, drawing blood.

"You have no faith in the State, David. I'm surprised."

"Yes, I have," Black denied, forcing the words out between thick lips.

"No, David, you have no faith in the State. You never did have, or you wouldn't have failed it, you wouldn't have rebelled against its dictates."

It seemed like he and Reed were alone in a huge dark space; he couldn't even hear the breathing of the others. There was only himself and Reed's calm, cold face with the half-friendly, half-reserved eyes.

"Perhaps the State made a mistake, perhaps some of those dictates were wrong—"

A balled fist caught him on the side of the head, jarring him and making him sick again. One of his ears suddenly developed a buzzing within it.

"The State is never wrong, David. You know that."

Weakly. "If you say so."

Something caught him just above the kidneys and made him double up, clutching his aching sides.

"Not if I say so, David. It's a self-evident truth, it's something that you've been taught from childhood and which you should know by now."

"Perhaps it's because I was taught it from childhood that I believed it, but that doesn't make it true!" The pain had torn it from him before he could stop, knowing full well the treatment that would follow.

Reed's eyes glittered with a sudden fury and his face twisted. "You shouldn't have said that, David."

Another jab to the kidneys and they started working on him in earnest, cutting him with silent blows from their belts. He opened his mouth to scream with pain and somebody jammed their hand across it.

"Repeat after me, David: The State is a Perfect State."

Somebody bent his arm behind him and forced it up.

"The State is a Perfect State." Without feeling.

"You don't sound as if you mean it, David." A shooting pain as his arm was forced higher. "The State is a Righteous State."

"*The State is a Righteous State!*"

He repeated almost prayerfully.

"It is the duty of the State to decide what is best for its citizens."

A tearing pain and he babbled it eagerly.

"And with the State as perfect

and righteous as it is, you know you committed a great wrong in defying it, don't you David?"

"Yes, oh yes!" he cried.

"And that in your defiance, the State is within its rights to regretfully deprive you of the greatest boon of the State, that of life itself."

"Yes," he whispered.

In the little circle of light, he could see that Reed had his Williams aimed at his head. The others were crowding in behind Reed now. The handsome, healthy faces of the State waiting with glistening eyes and bated breath for the flash of light and the tiny, telltale odor of scorched flesh.

"It then becomes my duty, as a Hunter of the State, to carry out its sentence. In defying the State you became politically unfit, and one politically unfit is one criminally unfit and must be eliminated. It will be as you requested, David. One burn, right between the eyes."

Black lowered his head and waited for the end of his pain.

Suddenly there was whispering in the background, and Reed turned to him with disappointment heavy in his voice.

"It took too long to make you see your errors, David; it's after sundown." His voice became filled with disappointed rage. "Remember me by this until an hour from now, then!"

Another heavy blow and the lights blinked out; he could hear them leaving.

He sagged limply down on the



wet tile. He had lost something, something that had played a major part in his life. And now it was gone. The State itself had finally forced his admiration and respect for it to wither and die.

But even that had its compensations. It had taken a long time but he was no longer blind and he needed nobody else to convince him. The State was wrong and he was right,

the State was corrupt and he was pure, the State had long ago betrayed its trust and he had kept faith not so much with himself as with something that was higher than the State.

He slowly lifted his body from the tile. He had another hour of freedom.

The grass was soft and green and

smelled strongly of clover. Elizabeth Smith plucked a blade of the clover and stuck it between her teeth, then hunched up on her side and stared at the far horizon. The heavy lines of the buildings of the city, some distance away, offered a strange contrast to the delicate tracery of the exhaust trails left overhead by the military rockets.

People are born and people die, she thought grimly, but the institutions go on forever.

She plucked another blade and continued staring moodily at the city, the gleam of the military barracks and the administration buildings standing out against the background of the rusting shacks of the rank-and-files. A neat, standardized world mobilized forever against a threat that had long since vanished.

John Doe stirred next to her. "Did you ever hear of anybody named Machacek?" he asked irrelevantly.

"People don't have names like that."

"Or Maccabees or Butney or Glinka or Rosenberg or Fanti?"

She looked at him thoughtfully. "What's your point, John?"

"The world," he said bitterly.

"That's what's wrong with it. Everybody is named something *safe* like Smith or Jones or Black or Johnson. Standardization is even extended to names. Move out of the norm even in that and you're subject to suspicion."

"How did it start?" she asked

casually.

"It was a long time ago," he said, suddenly enthused. "Everybody had to have the same goal, everybody had to think the same if the State was to survive. Individual security had to give way to collective security and thus individuality had to die—even in names. People with unusual names were automatically suspected of treason against the State, so they changed their names to something different—something safer." He paused. "I looked it up in the records the other day. My family name used to be Steinger."

She laughed. "What about Black?" she asked. "We've analyzed before the only way to win against the State, and for that we need him—badly. And we can use his strength."

"I'm still the pale scholar, aren't I, Beth?"

She shushed his lips with hers. "What a revolution," she whispered a little later. "A school-teacher and a jealous scholar, trying to pull down the whole facade of a strictly military government!"

He smiled down at her. "We had our own private revolt against the State a long time ago, didn't we, Beth?"

She nodded. "And now what do we do with Black?"

He frowned. "I'm not sure. He's been given a difficult time by Reed and the other huntsmen, and he reacted favorably on his first view of something diametrically opposed to his education of scientific milita-

rism. So what? He had a few of those tendencies to begin with, but that doesn't mean he's turned against everything he's been taught is natural and right. I won't jeopardize the revolution merely because Black was fascinated by his first taste of art."

"What about what he went through in the hotel basement?"

"I can imagine what his reactions must have been. Sheer hate, once they left him. But would he retain that hate if the State offered to take him back, unlikely as it may seem? Or would he rationalize what had happened to him, admit that his guilt may have deserved such punishment, and be interested in recovering the good graces of the State? It's been his religion, Beth, and I would hate to chance it."

"You may have to."

He looked at her, puzzled, and tried to figure out the meaning behind her remark.

"What do you mean?"

"No revolution ever succeeds by standing still, John. You either go forward—or you fail. The longer eventual success is postponed, the greater the chance that somebody will discover the plot. And if this one is discovered, the State will draw enough strength from the fright of having discovered a plot in its midst, that its creaking existence will be perpetuated for another several hundred years. You know we need Black. We need him bad enough to take a chance on him."

"We need somebody with a differ-

ent type of courage than the kind we have," he mused. "We'll try to save Black, then. You can go after him if you wish, Beth."

"What's his location now?"

He looked at her, somewhat worried. "I don't know. We trailed him all through the second part of the hunt and shortly after that, we lost contact with him."

She sucked in her breath sharply. "That means he's learned how to hide, doesn't it?"

He nodded, "And this is the last period of the hunt, Beth. It's up to us to find Black before Reed does."

VI.

*Each narrow cell in which we dwell
Is a foul and dark latrine.
And the fetid breath of living Death
Chokes up each grated screen,
And all but Lust, is turned to dust
In Humanity's machine.*

"The Ballad of Reading Gaol,"

Oscar Wilde

It was a dirty street, lined with dirty shops and alive with dirty people; stubble-faced men with dull eyes and ragged clothes, who wandered aimlessly down the walk or sat on the curb and stared out at nothing at all. Those few well-dressed individuals on the walk carefully inched their way, avoiding the human wreckage that littered the scene.

Black sat on a curb with two other bits of flotsam. His clothes were dirty and ragged, and his face

was stubbled and laced with dried blood along one cheek where Reed had cut him.

High above him, the sun burned down from the brazen bowl of the sky and Black fished a filthy strip of cloth out of one pocket to sponge his forehead with, then used it to bat lazily at the flies. They were thick along the gutters and in front of the stores, attracted by the smells.

"It's a hot day," one of the men next to him mumbled.

Black didn't bother answering.

"We need a bottle of wine," the man whined. "Only fifteen cents, split it three ways."

Black felt in the pocket of his soiled pants and found a nickel and flipped it to the man. "Don't take long, Harry."

Harry turned a thin, angular face towards him. "You always get yours, don't'cha?"

He was back in a minute. Black casually wiped the top of the bottle when it came to him and gulped his third, then passed it on to the old man on his right. When he got the bottle back, he glanced at the label and read it idly, then dropped the bottle in the gutter at his feet.

"You shouldn't a done that," Harry complained. "We get two cents back on the bottle."

"Add it to my share next time."

"Ya sure ya got the dough?"

"Stuff it, willya?" He cut the petty argument short and went back to staring dully at the street.

It was all in the attitude, a dim portion of his mind thought. The

secret of successful hiding was not to imitate your background but to become a part of it. He would be safe where he was and doing what he was until after sundown. And then, according to the rules of the hunt, he would be entitled to all his property rights and rights as a citizen of the state.

But that wasn't what he wanted, he thought slowly and painfully. He had been hurt too badly. Not so much physically, as that the State had shattered its own illusions, betrayed his faith, and left him groping for something to take its place. And what he had finally found as a substitute to fill the vacuum was a desire for revenge.

He felt his elbow nudged. "How long you been on the Street, Mac?" The old man on his right asked the question dully, merely looking for conversation.

"Long enough," Black grunted. "Who keeps a record of how long they're on the Street?" Who indeed would keep a record of how long they had been marooned in his hell?

"I don't suppose nobody does," the old man ruminated. "Not anybody. Myself least of all." He hawked and spit in the gutter. "You won't believe it but there was a time when I had a pretty good job—pretty good job and a good home. And then I lost it all. Never gone back, never gone back to the job or the wife or the kids. Grown up by now, I suppose, probably got married and got families of their own. But I've never gone back." He

seemed oddly proud of the fact, and ashamed at the same time. "Wouldn't want an old man like me around anyway," he mumbled. He looked up at Black. "'Nother bottle?"

Black found another nickel.

"Some of the old guys, they talk a lot, don't they," Harry said.

"Yeah, they sure do."

They split the bottle again and Black found a backrest against a lamp post and relaxed against it. The legion of lost men, he thought, haunted by their own memories.

He shook his head and tried to clear it, then gave it up. The best way of hiding, he reflected fuzzily, don't try at all. Just let yourself drift in a human boneyard—Harry and the old man and himself, all members of a degenerate humanity. At least they proved the State's contention that there were such things, though he had never seen any before now.

Harry pointed to a few of the better dressed souls keeping a careful distance from the bums and drunks on the street. "Well dressed slobs," he sneered, "coming down here to show us how much better off they are! Luckier than we are, that's all."

"I don't know," the old man said. "Maybe they worked for what they got. There's a difference in men—some of 'em got backbone and guts, and others are made of sand." He shrugged and laughed a little wheezily. "We don't live like they do and we don't deserve to. We

don't even live from day to day—we live from bottle to bottle."

Black's mind agreed alcoholically with the old man. A good brand of street corner philosophy at that.

Suddenly his mind snapped alert and he could feel the fear growing on him again. The old man was dull and lifeless, the hopeless type you could normally expect to find on the Street. His clothes were dirty and ragged and all he lived for was a bottle of wine and listless conversation with anybody who happened to be sharing the curb with him.

The old man belonged there. But Harry didn't.

Harry was a little too aggressive, a little too pushy, and a little too bitter. Harry was trying too hard—he was a little too *professionally* ragged and dirty and down and out.

Black's mind worked desperately. It was possible that Harry had tracked him, but not too possible. It was more likely that Harry and other huntsmen had been stationed on the Street as a logical precaution in case he should have tried to hide there. What had probably happened was that he had run into Harry by accident.

He thought back to that morning when he and the old man and Harry had first run into each other. Harry had watched both he and the old man quite closely, and as the morning wore on Black remembered that Harry seemed to pick up some of their mannerisms and phrases. Like any good, competent huntsman Harry was trying to improve his

masquerade.

Harry, Black thought with a vast sense of relief, was studying him.

He stood up and kicked the bottle off into the gutter. "I think I'll drag outa here. You get cramped sitting in one spot all day." He looked down at the old man a minute. "Take it easy, pop."

The old man mumbled and fished the bottle out of the gutter; he didn't bother looking up. You met too many people on the Street during the day; people you'd probably never meet again.

Black strolled away, wondering tensely if "Harry" would follow. It seemed logical that he would. He had made a good contact and wouldn't want to throw it away.

Harry caught up with him just outside the Atlantic Garden Mission. "I'll tag along," he whined. "I ain't been on the Street too long; maybe you can give me pointers."

Black looked at him sourly, inwardly feeling elated. "The first pointer I can give you is to keep your nose outa other people's business. I didn't ask for company and I'm not looking for it."

"It's a free world! I can do as I please."

Black shrugged. "Suit yourself." He turned up an alley at the back of the mission. Harry remained at the mouth of the alley, a slight, stoop-shouldered figure almost lost in his ragged clothes. His deception, Black thought, was letter perfect with only one flaw. It was, in

Harry's own eyes, just a deception. He wasn't "living" his part.

"Where you going?"

Black seemed to relent a little. "Bread and soup at the back door, then inside for some singing in payment." It sounded logical. Through the front windows they had seen some tattered specimens standing up and dutifully caroling. Harry hesitated, then followed him.

At the back he said: "I don't see no bread line."

"You can't expect them to be as efficient as the State," Black said softly.

Harry's face went carefully blank. "What's the State got to do with it? I don't get'cha."

Black smiled tightly. "I think you do," he said as he drove two stiff fingers deep into Harry's abdomen. Harry doubled up violently and the edge of Black's hand caught him on the small bone at the bridge of the nose, between the eyes. There was a soft snap and Harry slumped limply to the ground.

Black shook a little with the reaction. It had taken a lot of effort, more than he was actually able to expend. And there was always the chance that he might be mistaken—

He felt inside Harry's shirt, his hand trembling. He felt thin straps and followed them to a miniature transceiver strapped to Harry's back. He took it off and fitted it beneath his own shirt, and fastened the tiny flesh-colored earphone into his ear.

There was an even better way of

lasting through the hunts than sinking passively into the background, he thought coldly. And that was to turn the tables and hunt Reed.

The ultimate winner would be whoever found the other first.

He spent the next two hours listening on his transceiver set to the reports that flowed into Reed from his hunters stationed throughout the city. Reed had, he was forced to admit, organized the hunt very efficiently.

The outskirts of the city and the lightly inhabited residential areas were those that were most lightly covered, as expected. A few men equipped with sniffers were stationed there, and had a given cross sectional area to cover. And there were hunters covering the main highway exits out of the city.

The majority of the hunters, however, were stationed in the more crowded sections of the city. Some were in the city's bureau of detectives, where they could keep track of reported murders, accidental deaths, and other crimes that he might unwittingly be involved in. There were a few in the fire department for the same purpose; all these precautions predicated on the theory that a man from another century might very well stumble into serious trouble in the civilization in which he was stranded, and thus twitch the web that would send the notice to Reed.

Every transportation station in the city was covered, from the air

and railroad terminals to the bus depots. And then there were the several hundred hunters who had nothing to do except mingle with the crowds on the street, as Harry had done. How all of them had scattered throughout the city and slipped into places of importance had probably been ingenious, though not too difficult. They had been trained for their jobs, as he himself had once been trained for the hunts. And the people in a culture like this were notoriously easy to fool: faked credentials satisfied the need for Authority and a little loose money could solve any of the other problems that might arise.

The whole intricate hunting system was based on the quarry's moving around in its efforts to escape, Black thought. Once you panicked, the first urge was to flee, to run, and once you did that, the living web had no difficulty keeping track of you. You left a trail like any other beast in any other jungle.

He listened to a few more of the conversations and felt increasingly uneasy. There had been—unknown to him—a steady attrition among the hunters, unexplained by the statistical possibility that a few of them might be the victims of accidents. He had settled for a few himself, he knew, but that wasn't the answer either.

The point was that some other agency than either he or Reed was involved, and that this agency, whoever or whatever it might be, was eliminating hunters as casually as

you would pluck flowers in a park. But Reed, of course, would think it was his doing.

His earpiece buzzed. "Harold Jones, time to report." Black paid no attention and the earpiece buzzed again, somewhat impatiently. "Harold Jones, report please!"

He tensed. Harold Jones—"Harry." Reed was calling for a report but that report wouldn't be forthcoming. Harry was in no condition to report to anybody, ever. Which meant that Reed would investigate and then they'd have another lead on him, once they found Jones' body.

But if he answered in place of Jones and got away with it, it might be another three or four hours before Jones' body was found, a three or four hours that he could use looking for Reed. And then again, if Reed suspected—

He wondered if his nerve would hold out. It would be so easy to drift back to the Street—

"Nothing to report," he said flatly into his throat microphone.

"Check." And Reed switched over to another huntsman.

Black mentally congratulated himself for taking the chance, though he realized it hadn't been too much of one. Metal and tubes had a curious way of extracting personality and individual enunciation on a simple hookup like this. But he still had the task of locating Reed.

He went back to the Mission and became just enough of a repentant

sinner to gain access to the Mission washroom. He washed and shaved and then dumped some dye into the bowl for a quick change of the color of his hair to a natural looking blond. His glasses were discarded and wax once again altered the shape of his face. It was a poor job, he thought, but he was too tired to do a good one. Maybe its very imperfection would be an aid to him.

Most of the huntsmen were stationed in the business district and Black drifted that way, hoping to catch one who would lead him to Reed. He was running a dangerous risk, for there was always the possibility that he would be spotted by one of the huntsmen before he could spot one of them. But that was a declining possibility and he ignored it, letting himself become as absorbed as possible in the people and the shops around him. There would be no panicky movements this time, no white-faced searching of everybody in the crowds that would show his fear and mark him for easy spotting.

And in half an hour he had found himself a huntsman.

Black located him by listening to the reports on the transceiver, and traced him to his station—the clothing store where he "worked." Once inside it became a problem which of the clerks was the huntsman. Black drifted through the various departments and finally found him selling shirts and ties behind the counter. He was a little too husky to be the

professional clerk type, and he was far too interested in the people who came into the store.

And his taste in clothes, Black thought grimly, was a little too conservative for this century.

He went up to the counter and started pawing through the display of ties.

"Can I help you, sir?"

"I think you can, citizen," Black said in a low voice.

The clerk's hand darted towards his waist.

"I wouldn't, citizen."

The man's face greyed and Black realized he had a reputation. "What do you want?"

In a tired voice. "Where's Reed?"

Resolutely. "It's against the rules of the hunt to give information to a quarry."

"I'm too tired," Black said, "to play games. And I don't have the time. Answers like that will lose you your life."

The young clerk recovered some of his poise. "What makes you think I'm afraid of losing my life?"

"It all depends on how you lose it. I have a Williams trained on you and adjusted so it won't char your clothing—it will just cook you rather slowly."

"If I told you, I would be betraying the State, Black."

Black started fumbling with the ties again. "That's so, isn't it?" His voice had a heavy, flat quality to it.

A light mist of sweat appeared on the clerk's face. "It will do you no good, Black. I would rather die for

the State than betray it."

Ringling words, Black thought. He would have said the same at one time. "These are nice ties," he said casually. "I don't care much for the conservative ones, though. I like the bright colors and the large figures best."

The clerk's face was red and sweat had soaked through his shirt. Black turned his Williams up one notch higher. The clerk gasped.

Black found himself wishing the clerk would give in. By now, the skin beneath his clothes must be an angry red, prelude to blistering. He wondered, if he was in the clerk's place under the same circumstances, how much pain he would take before he cracked.

"You're killing me, Black!"

He looked at the clerk coldly. "That's the only time when a citizen becomes concerned about the taking of a life, isn't it? When it happens to be his own."

The clerk stood it for a minute more and then wilted. "Reed's at the same hotel you started out from."

"What room?"

"The one next to yours."

He could have expected that. "Thanks. Now hand over your Williams and your communications set."

The clerk did something behind the counter and a moment later handed over a paper bag with the articles inside. Black took them, then turned his Williams up another notch.

The clerk collapsed.

"What happened?" Another clerk

hurried across from the suit racks, bleating the question.

"Heat prostration; you'll have to get him to a hospital immediately."

The clerk dialed a number, then turned a white face to Black. "It . . . it isn't fatal, is it?"

Black shook his head. "No, no it's not fatal," he said in a tired voice. He paused a moment, then added almost to himself: "But it will be a few hours before he regains consciousness."

And that was time enough.

VII.

*I never saw a man who looked
With such a wistful eye
Upon that little tent of blue
Which prisoners call the sky.
And at every wandering cloud that
trailed
Its raveled fleeces by.*

"The Ballad of Reading Gaol,"

Oscar Wilde

He loitered across the street from the hotel for half an hour, careful to see what went on but not be seen in return, fighting to keep his eyes open and husband his strength for the final effort. He had to be wide-awake and alert, he told himself desperately. He couldn't afford a mistake.

The hotel entrance was flanked by a cigar store and a candy shop, while a drugstore occupied the main floor, corner. During the time that he watched, a man brought a paper from the corner newsstand and

sauntered slowly down the block, a few moments after he passed the entrance, another man left the hotel to go to the drugstore, apparently to get coffee. When he came back, the clerk in the candy shop took to the outside for a brief sunning until she, in turn, was relieved.

It was a complex, seemingly natural movement of people that managed to keep the entrance to the hotel under watch at all times. And inside the hotel lobby there were probably other watchers.

The front entrance, then, was out of the question so he worked his way around to the alley in the rear of the hotel. The back entrance was guarded, too, but not nearly as well. Black waited until the single guard had turned his back, then slipped off his shoes, followed him, and struck him from behind.

His time was running out, he thought. You could work your way so far through a guard system, but the farther you worked the greater the chance of discovery. At any moment the game could deal him his last hand; from now on he would have to depend on speed.

The floor that Reed was on was—miraculously enough—clear. Reed very obviously thought he had taken enough precautions against a highly unlikely event.

Black approached the door very quietly, then threw it open.

He found himself staring into the muzzle of a Williams, aimed at the pit of his stomach. Reed was standing by the window, facing him. A

little to his left was the small transmitter setup and a map of the city, dotted with small red lights—the locations of the various huntsmen.

"Close the door behind you."

Black did as he was told, feeling a vast sense of failure. He had come so far—

Reed waved him over from the door. "In all fairness, I must admit that you almost took me by surprise. If it hadn't been for an automatic trip signal in the hall, I think you might have had me."

Black felt on the verge of collapse. He had come to the end of the line and nature was demanding its payment for three days and nights of tension and fear and lack of sleep. It didn't particularly matter what happened now. He had lost the game but there was compensation even in that. At least it was over with, at least he was no longer the rat trapped in the maze of the city.

"You'll have to have witnesses to verify that the quarry met its requested end," he said dully.

Reed nodded. "I've already sent for some of the citizens whom you may have seen downstairs. They'll be here in a moment."

Black settled back in his lethargy, waiting. From where he sat, he could just see a small corner of the sky through the window. There were small white clouds in the sky, floating slowly across his line of vision. Floating in utter freedom and in complete indifference to the tragedies playing out their last acts

beneath it. Black had a sudden intense and childish longing—

"You know, you had escaped the web altogether this time," Reed continued affably. "I had no indication at all of where you were until you had walked into this room just now." His smile grew somewhat bleak. "You've proved to be a very dangerous quarry, David. You've eliminated some of my best huntsmen."

"There were bound to be casualties," Black said indifferently.

"That's quite true, but the number exceeded my expectations."

Black said nothing, though again he felt puzzled. Most of the time he had been too frightened, too worried about his own ability to hide, to give attention to eliminating the huntsmen after him.

Reed seemed faintly worried beneath his urbane exterior and Black wondered for a moment why, then had the answer in a flash.

The huntsmen that Reed had asked to come up hadn't appeared yet, though they had had more than enough time. The logical deduction to make was that they wouldn't appear, that whatever agency had engineered the death of so many huntsmen before was once again acting in his favor, granting him—if nothing else—time.

And with that thought he launched himself at Reed giving the hunter no warning whatsoever.

Reed grunted at the impact and tried to bring his Williams to bear, but the surprise had taken him off



guard. It was over in a minute and a disheveled Black had him covered with his own burn pistol.

"You have, at best, only a few moments," Reed said coldly. "When the other huntsmen find you here, it won't be pleasant."

"No, it won't be pleasant then," Black answered, feeling an insane giggle wanting to well up within him. "But it's very pleasant now. Enough to outweigh the possibility of pain later on." He strode to one side of the room and kicked in the communication apparatus that Reed had set up.

Then he turned back to Reed. The memories of the days and nights of hiding in the alleys and slums,

afraid of every shadow and every sound, crowded in on him. He suddenly lashed out and caught Reed across the face. The man staggered and blood trickled slowly down the side of his mouth.

"Tell me that the State is corrupt and a tyranny, Joseph," he pleaded.

"I won't betray the State," Reed said stiffly.

Another blow across his mouth, splintering the teeth.

"Say it!"

"I can't!"

"Try!"

"The State is corrupt!"

"Again!"

Reed's face was a reddened mask. "The State is corrupt!"

A small portion of Black's mind felt sick but he couldn't stop himself. He had paid too much for this moment in agony and fear, and this was the punishment that the State had taught him to extract of others.

He remembered with vivid clarity the punishment he had taken on the tile of the swimming pool. "The State is an imperfect state, Joseph!"

Reed fell silent, licking the blood away from his mouth, terror full in his eyes.

"Go ahead, tell me, Joseph! Tell me what I want to hear! That the State is a monstrous thing with the power of life and death over its charges! Tell me that the State is wrong and has broken its trust!"

He was on the brink of hysteria, he realized dimly, yielding to the exhaustion that had piled up. It would be but a moment until he broke down completely. And Reed was waiting for him to do so.

He had so little time, he thought blindly, to punish Reed, to make him feel as he had felt. He raised his hand again.

"All those things are quite true," a voice said calmly behind him, "but this has gone far enough. Let him alone, Black."

He hadn't heard the door open behind him. A woman and a man were there, and a few others crowding in behind them. The woman was the schoolteacher type, severe face and plainly dressed. He had the feeling that he had seen her once before, but he couldn't remember where. She came over and took the Wil-

liams from his limp hand.

Black sagged back into a chair, dully aware that the newcomers weren't huntsmen. And with that realization, he laced his fingers in front of his face and let the tears of exhaustion stream down his cheeks.

When he awoke, the feeling of utter exhaustion was gone and the feeling of deadly danger had passed with it. He felt cool and clean and knew that somebody had washed and shaved him, and then put him to bed between soft, white sheets.

"You feel better now?"

He turned his head to one side and looked at her. He had met her twice before, he realized, under wholly different circumstances. Once in a wine shop and once in the art museum. And she was now dressed, he noted with some dismay, in a rankanfiler's simple smock type dress. Her companion, a thin, scholarly looking man with a feeling of steel about him none the less, stood by the window.

Through the clear plastic of the window, Black recognized the gray hills and drab towers of his own century. He was home, he thought, but with none of the feeling of homecoming that was usually present. He was, at best, a hunted outcast, even though his present surroundings were anything but dangerous.

"You'll only get into trouble helping me," he said slowly. "The State is pretty thorough in searching for escaped criminals."

Elizabeth Smith laughed. "We're not exactly new at this, you know. Your name has been erased from all State records and your property has become State property. As far as the State is concerned, you were killed back in the twentieth century by hunter Joseph Reed. And there is an adequate number of witnesses to verify that. The hunt is over for you Black, though you'll have to live under an assumed name and occupation now. No danger is connected with it, though since nobody's looking for you."

Black absorbed this in silence. "Where do you fit in all of this?" he asked hesitantly.

The man turned from the window and came over to the bedside. "Has it ever occurred to you that some of the quarry, at one time or another, might have got away?"

"No quarry's ever escaped!" Black denied.

The girl's voice was crisp. "You did."

"Do you think that escaped quarry are reported, Black?" John Doe asked.

Black's first impulse was to affirm that they were, and then he paused and gave it some thought. There was a chance that some incompetent hunters would risk the chance of being discovered in a lie rather than admit their failure and be subject to the laughter of the community.

"You were quarry at one time, weren't you?" he guessed.

They nodded.

Black was curious. They didn't

strike him as being particularly resourceful or capable in the hunts. They didn't look like they would have the strength or the stamina to last—though neither had done him much good.

"How did you get away?"

"We don't look like the type who would, do we?" the man asked dryly. "But looks aside, Beth and I and some of the others were adapted by past experience and training to be the most elusive of all quarry. As you know yourself, ability to *become* a part of the civilization in which you are hunted is the most important single item in hiding. Now considering that the hunts are held throughout all time, who do you think would be the best equipped to hide?"

"I see," Black said. "The two of you are historians then."

"Close enough," the girl said. "Actually, historical librarians, and that's speaking in the past tense; we hold other jobs now. But as quarries, we were in a position to know more about the background and culture of each civilization than any citizen or hunter."

"You were the third party concerned, weren't you?" Black asked.

The man nodded. To use an old sports phrase, we ran interference for you—we and the others."

"The others?"

"We aren't the only ones who have managed to win through the hunts. And we got together." He paused. "You may as well know sooner or later, Black, that we—

and you, like it or not—are in a revolutionary movement against the State, that we hope to overthrow it.”

The idea sank home rather slowly to Black and when he had fully grasped it, he was appalled. “And you want my help, don’t you?”

“Would you?”

“Of course,” Black said slowly. “Certainly.”

The way in which he said it made it obvious what he was thinking. If he refused, he had a good idea of what would happen. But the revolution would never enjoy his full efforts.

“You’ve been raised under the State and indoctrinated in its theories very thoroughly,” the scholarly man explained. “It’s only natural that you would be reluctant to help. But the State hasn’t always existed, Black. There have been other and better types of government.”

Black looked interested and the man plunged on.

“Five hundred years ago, the State—it wasn’t called the State then—existed in a pretty black world. There was a struggle for survival, and in order to win that struggle the State was forced to turn itself into a military nation. It succeeded, possibly beyond its wildest intentions. Art died, literature died, individual freedom died, and the nation itself divided into two classes—the military, and those who supported the military; what gradually became the citizens and the rank-and-file of our own time.

“The State, as a state, survived. And with its winning, the need for our type of State died. But history shows that even when the need for them disappears, institutions and customs still live on. The State has been mobilized against a nonexistent enemy for the last four hundred years, Black, and we think it’s time it changed. We need your help.”

“How could I help you?”

John Doe smiled. “How would you revolt against a state like this one, Black? By military means?”

“No,” Black said reluctantly, “of course not. The best way would be to work from within, I suppose—to corrupt the State and the people who run it.”

“That’s right. That’s why we need your help. You know the majority of citizens in high places better than we do. If you helped us, it would be to supply information about the personal habits and whims of those high in the government. And perhaps, you yourself would have to undertake highly important and dangerous missions.” He paused. “To be perfectly frank, we need a renegade citizen—one we can trust.”

“What type of government would you install?” he asked cautiously.

“A lot like the one you saw in the civilization you were stranded in,” Elizabeth Smith cut in quietly. “Without its obvious faults. Individual freedom to do as you wished, freedom of expression in art and literature. There would be such a thing as family life instead of the

sterile exhibition you now have where children are taken from their parents at birth and where procreation is carried out under State auspices. Not a very successful program, incidentally, for if you could see the birth rate figures, you would know that in another thousand years the citizen class will be extinct."

"I'm not so sure I liked everything I saw in that time," Black protested mildly.

"You saw both sides," she continued, somewhat bitterly. "Those people who lived in the slums may have lived there from economic necessity but it wasn't because the government forced them to. You saw the art museums and you saw the Street, you saw the slums and you saw the better residential district. A nation—one that is free—doesn't exist on a dead level, you know. Some people rise and some people sink, but they all can do as they wish."

They have saved his life, Black thought—he owed them quite a bit. But still, he couldn't change exactly how he felt. He wet his lips nervously and tried to phrase his next question as delicately as he could. "I take it you contemplate a government where the rank-and-file would have an equal voice with the citizens?"

Elizabeth Smith looked startled, and then let her breath out in a small "Oh!" of dismay.

John Doe looked at Black with disgust and then spoke as if Black wasn't there, as if Black no longer

concerned him. "It isn't worth the effort, Beth. We should've considered that his background would prejudice him."

She caught her breath and turned back to Black, her voice under obvious control. "We're not quite as human as the citizens, are we Black?"

"I didn't say that," he defended.

"No, but that's what you meant." She wheeled a portable view-set up to the bed and stuck a roll of film in the view-case, then held the earphones towards him. "Here," she offered. "You live the roles for a change."

The fear was back with him again, the fear of running and hiding and being caught. He was dashing down a cobbled street, with odd-looking, ancient houses bordering it. There were gutters along the sides of the street, swimming with garbage and filth. Every once in a while somebody leaned out of one of the windows along the way and poured fresh slops into the street below.

He was running, with dogs yapping at his heels and indignant housewives swatting at him as he sped by. He was finally cornered against a stone wall and the huntsmen eagerly gathered to see justice done. He felt a sudden burning in his chest and even as he fell, realized that he had never had a chance and wasn't supposed to have. That he had been condemned to death in a civilization he knew nothing of for a crime that he had never com-

mitted—

He was a young girl, staring wild-eyed at the sudden hate written on people's faces as somebody shrieked "Witch!" and pointed an accusing finger at her. She didn't even know what the word meant, except that it was bad and capable of arousing hate in the crowd. She started to run and then the pack was after her, skimming stones and lumps of filth at her head.

It was only after she had half lost consciousness from the smoke of the faggots piled around her feet, that she got the ending she had requested—one burn from a Williams, right over her heart. But it came too late to save her from pain—

He was a boy, not more than twelve years old, in a vast and smoky city where the buildings seemed to tower for thousands of feet on either side. He was seeing the same city he had just left, Black realized, but through a child's eyes. He was running, running, running—with the frantic pumping of a twelve-year-old's short legs. In the split mind that he had, Black wondered how the end would come, for the boy had been too young to request a specific end. Then there was a sudden squeal of brakes and a shrill scream and he knew—

"The last one," somebody was saying, "was interesting because the huntsman decided it added such a novel touch to kill the quarry by a

method not unusual to that particular culture."

He was holding his face in his hands, trembling. Elizabeth Smith leaned over and pointedly held her hand in front of his eyes. "It's just as human as yours, Black. It hurt me just as much when I cut it, and like you, I have to wash it to keep it clean. We're as human as you, Black. We live as long, we get just as sick, and we die with just as many regrets."

There was dead silence for a while. "Who were those people?" Black asked shakily.

"They were some of the ones we tried to save, Black, but got there too late. We only saw how it ended."

He took a sobbing breath and tried to control his trembling hands. There had been a time, he remembered, when he had been a hunter himself.

"How did the hunts ever start?"

"They began a long time ago," John Doe said softly. "They antedate even the State. They started out as manhunts for criminals and evolved into hunts for those who opposed the dictator states of the twentieth century. With the development of the State and time cars, the hunts were seized upon as a convenient means for utilizing the military setup of the State. They became a sort of game, but unfortunately bona fide political and criminal quarries became less and less plentiful. It gradually became the custom to falsely accuse rankandfilers of crimes to obtain them for quar-

ries."

"I think I suspected as much," Black said painfully, "but it was hard to turn against the State." His voice sounded tragic. "I was raised with the State as my religion. It was all I knew, it was my life."

"You'll have to make a new world, Black," Elizabeth Smith said. "You can't live in the ruins of the old one. Throw in with us."

He nodded and suddenly changed the subject. "What happened to Reed?"

"He's back as a small cog in the State machinery," she said. "He knows nothing about either John or myself or our organization, but he knows that you've escaped back there. But he's still claimed your death to the State."

"He should be killed," Black said harshly. "He did too much to me."

She frowned distastefully. "Is killing the best thing you can think of, Black?"

She and John Doe had the organization, Black thought slowly. They

could manage what he had in mind, and even if the State discovered it, the State was an inflexible institution and would not admit its error. All they had to do was plant certain whispers, certain implications—

And for Reed there would then be the agony and the fear and the knowledge that the proverbial thirty pieces of silver for which he had once betrayed David Black carried a heavy interest with it.

And for Reed, there would be no reprieve.

Joseph Reed was afraid.

He had tried to control it but he knew it showed in the glistening shine on his pale face, in the nervous jump of his cheek muscles, and in his restless pacing back and forth on the faded rug, alternating between the rumpled bed and the worn writing desk, with stops every few minutes at the soot-streaked window to note the position of the setting sun.

It was late afternoon. An hour or so more and the hunting-season would begin.

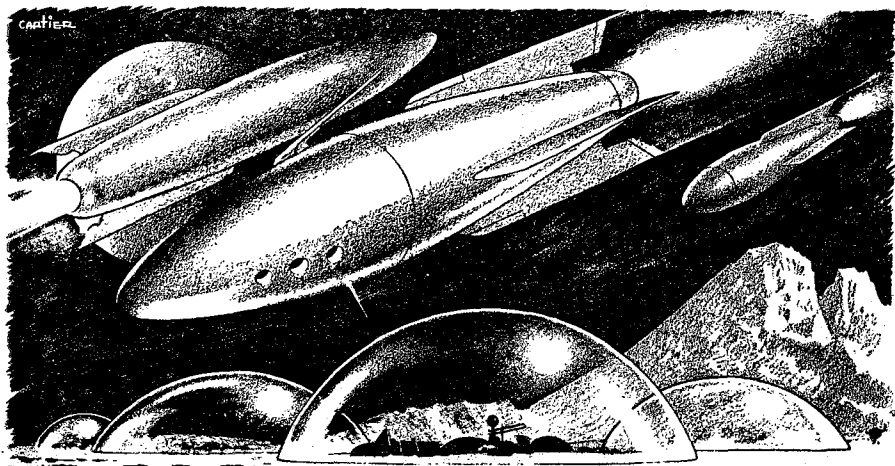
THE END

THE ANALYTICAL LABORATORY

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Place	Title	Author	Points
1.	Courtesy	Clifford D. Simak	2.39
2.	City of the Phoenix	M. C. Pease	2.50
3.	The Soul-Empty Ones	Walter M. Miller, Jr.	3.65
4.	Prometheus	Julian Chain	3.81
5.	The Monkey Wrench	Gordon R. Dickson	4.04

The Editor.



IMPLODE AND PEDDLE

BY H. B. FYFE

The Bureau of Slick Tricks could take advantage of anything—but it wasn't often they took advantage of nothing. In this case, was nothing, in one sense or another, that they needed . . .

Illustrated by Cartier

When his secretary announced the interstellar telecall, Tom Ramsay was on the balcony outside his office, watching one of his spaceships land. He smiled proudly as it flared down against the hazy background of Delthig IV's remaining sea.

Used to think I was big stuff with one interstellar ship, he thought. *Now I have three, plus ten locals. Guess I ought to find a buyer for the*

locals, though, before the Delthigans on III crank up to expand that Planetary State of theirs.

He glanced with continued satisfaction at his secretary. Tall, willowy, with hair nearly as black as his own short brush but features far easier to look at, Marie Furman was another symbol of his progress in this Terran colony. Then she spoke, and a cold little knot formed in the

pit of Ramsay's stomach.

"Telecall from Bormek V, Mr. Ramsay. A gentleman named J. Gilbert Fuller, of Sol III."

Ramsay hastily checked over in his mind all his recent operations. This, somehow, had become habitual whenever he recalled his one entanglement with the Bureau of Special Trading, during a stop on Terra two years earlier.

He noticed the girl eying the thin scar that ran back from his left temple, and realized that it had become more prominent with the paling of his features.

"Put it on my desk visor, Marie," he muttered.

Whatever he wants, he promised himself, I won't even splash it with a rocket blast. That guy is always one orbit closer to the heat than anybody else!

A moment later, the subspace waves were relayed to his desk and he saw Fuller face to face. An almost imperceptible lag after each speech was the only indication of the empty light-years between their physical locations.

"You're looking well," Fuller commented genially. "I hear that spaceline of yours is growing fast."

He looks just the same, thought Ramsay. As if he just finishing licking that mustache after swallowing the canary. And not one gold-plated hair of his head out of place!

Aloud, he remarked on the excellence of communication.

"Oh, this is not a relay," said Fuller. "I really am on Bormek V,

only two light-years away. Having a little vacation."

"Hope you're having a good time," Ramsay ventured warily.

"Well, I was, but something . . . ah, came up."

"Uh-huh!" Ramsay grunted.

He pressed both palms against the edge of the shiny black desk and braced his shoulders against the imitation Cagsan lizard skin of his chair, for the sake of feeling something at his back.

"Not exactly business of the Bureau," Fuller went on blithely, "but the Bormekians asked me to look into it."

"Don't tell me your Bureau of Slick Tricks doesn't have an agent around Delthig!"

Ramsay thought he knew of at least four, not counting the elderly gentleman in charge of the Bureau's local information service. Fuller waved one hand in a broad gesture, as if to imply that he would hardly make such a bald claim to an intelligent and sophisticated intimate like Ramsay.

"I fear I shall require . . . him, for other tasks," he said blandly. "So, naturally, I thought of you."

"Naturally," said Ramsay, glumly. "Glad to help if I can."

"Excellent!" Fuller beamed. "I knew you would be eager to cooperate. You are hardly one to miss noticing that we have been throwing a little influence behind you occasionally."

The spaceman's gaze wavered momentarily. He *had* wondered a few

times how he had managed to expand so rapidly. Hauling refined metals from the mines on Delthig II was standard, but out-system freighting from the fourth planet competed with some powerful interstellar companies.

Of course, the B. S. T. had power too, reflecting that which Terra had acquired by being at a spatial crossroads between the interior of the galaxy and the stars near the Edge. Ramsay usually thought of Fuller as lurking beside that crossroads, the biggest highwayman of all the Bureau.

"Now, then," continued the blond agent, "what can you tell me about Delthig III and its natives? I want to check our files."

"Well," said Ramsay, "the average Delthigan is half a foot taller than I am, wasp-waisted, with roundish, heavy shoulders. Arms and legs skinny but knotty, four each and three sections where we have two. Three mutually opposing digits for hands."

"Yes, I have the right file," agreed Fuller, checking.

"He'd have a sort of warty skin, gray with greenish tints. Three eyes, air vents like gills across the front of his face over a big shark mouth. Flappy ears set low on the side of his head, far back."

"What I'm interested in," said Fuller, "is political and economic information."

"Frankly," said Ramsay, "they won't have much to do with us.

They're totalitarians, you know, and they make a point of resenting our having two planets in the system. Guess they have their troubles keeping every John Doe at least half-fed and spinning the grindstone with all four floppy hands."

"Overpopulated?"

"Badly. Local guess is five or six billion."

"Other planets?"

"Nothing of use to them except ours, the fourth. Delthig II has good mines, but it's dead rock like the first. V and VI are little ice-balls circling way out back somewhere."

"So that they might be attracted to our colony?"

Ramsay hesitated, but decided that Fuller was quite capable of knowing a rumor from a trend.

"Talk is," he said, "that not only are they planning to throw us out, but they also are talking about spreading out-system."

"How much fact is in it?" asked Fuller, watching intently.

"I'm ready to sell out and leave," the spaceman told him simply. "Never saw a fat Delthigan yet; they're all run ragged keeping their glorious Planetary State in what they call 'readiness for activity.'"

"The old, old story," agreed Fuller. "Well, Tom, that does interest me. Their neighbors in space, Bormek, Ronuil, and other stars, are all good customers of Terra. The Bureau will have to do something. Letting Delthig import a few of the necessities of life might save a lot of trouble later."

Ramsay judiciously kept his mouth shut. Fuller's alert blue eyes studied him.

"In fact," said the B. S. T. man, "we are arranging a trade conference. Since you are practically on the spot, I knew you wouldn't mind hopping over to Delthig III to represent us—would you?"

"Oh . . . no . . . of course not," muttered Ramsay, unable to think of an excuse that would be good enough to fool Fuller.

That seemed to settle it. He tried various afterthoughts, stressing the fact the Delthigans had few manufactures except space cruisers and primitive projectile weapons, and that they considered themselves short of raw materials. Their money was a joke and their credit nonexistent, he pointed out, so that a *del* could hardly be spent at whatever discount anywhere but on Delthig III.

"They don't know what they're up against in the galaxy," he said, "but they have five billion down-trodden 'citizens' to expend in finding out. Not even the B. S. T. is going to buy them off!"

"No?" said Fuller. "Well, try it anyway. You never can tell what's for sale."

Leaving Ramsay groping for further objections, he smiled genially and cut off.

Six days later, that smile returned to haunt Ramsay, as he viewed it again on a film recording of further instructions Fuller had sent to the

brand-new spaceport on Chika, the large inner moon of Delthig III's trio.

The spaceman had boarded one of his own ships a few hours after his talk with Fuller, bag, baggage, and secretary, leaving word for his general manager to divert all his other ships to Delthig III. In space, a message had reached him, warning that while the Delthigans had agreed to an unofficial discussion, they had forbidden any Terran visit to the surface of their planet. Hence the hastily erected plastic domes beside a flat plain on Chika, where Ramsay landed and found the spare, white-haired man formerly of the B. S. T. information service on IV.

"Hane is the name, Mr. Ramsay. Heard you were to be in charge here. Your office and our quarters are in this pre-fab building, and this bubble over it is the main dome."

"What could you get in the secondary ones?" grunted Ramsay.

"Not much except barracks and space for storage. We had quite a time getting Terran workers over here from II in time to get this much laid out. The Delthigan representative is expected shortly."

Ramsay introduced Marie Furman, who was togged out in plaid slacks and jacket as if a trip to Chika were a sporting event. He glanced through the transparent plastic wall at the other domes. Beyond them were low hills, tinted green by traces of scanty vegetation.

"There is some air out there," Hane remarked, "but not enough

for anything but mosses and a few other growths. By the way, we recorded a message for you from Mr. Fuller."

The instructions, Ramsay saw when he projected the film in the office set aside for him, consisted mainly of advice and a list of exotic exports Fuller was prepared to send to Delthig. Some, Hane had reported, had already arrived and been stored under the domes.

"So find out," Fuller's image advised near the end of the film, "what the Delthigans need and what they can give in return. Be liberal; the Bureau wants to establish cordial relations."

"This won't work, you know," Ramsay muttered gloomily to himself as the film talked on. "You can't buy off that bunch. They'll take, but they won't pay. When they think they're strong enough to make trouble, out they'll come, like a swarm of bees!"

Fuller was reviewing some of his "bargains."

"... And that new energy projector developed on Bormek V might have a military use that would make them happy. And don't forget the patents for the plastic pre-fab house, and the automatic kitchen, or the couple of hundred tons of bright dyes from Fegash—that last ought to get them if their culture is as dull and routine as you say."

Ramsay silently agreed as the picture of Fuller peered more closely

at his list.

"Oh, yes," said the B. S. T. man, "I would personally be very happy to unload those twenty million cheap, one-channel telescreens from Vozaal VII that I had to take for . . . diplomatic reasons. They're a big bulge on my account, and—"

"Huh!" snorted Ramsay, turning off the projector with a disgusted flip of his finger. "Marie!"

His secretary appeared in the doorway to her small office.

"As soon as those techs get through to Fuller, remind me to tell him his pet gyp scheme is no good. The Delthigans have no television yet. Hane did say, didn't he, that we have a subspace set that will reach Bormek?"

"Yes, Mr. Ramsay. They promised to—"

A flare of light seeped in through the window of the one-story building. Ramsay rose, but found that the window was not designed to be opened. As he was craning his neck in a vain attempt to see the landing field, Hane entered.

"That will be the ship from Delthig," he said, rubbing his bristling chin. "Wish I'd got rid of this stubble, but we'd better see to them immediately, Mr. Ramsay. Officials of that government down there are apt to be impatient."

Ramsay nodded sourly, reminding himself that he was representing someone else and therefore expected to be prudent about taking personal offense. He followed Hane

to a chamber at the other end of the building in which the air pressure and moisture content was a compromise between that of Delthig and conditions favored by Terrans. He found it too dry for comfort.

Presently, three Delthigans were ushered in, and escorted by Hane to places at the high table. They did not use chairs, so Ramsay perforce stood facing them.

Not very fair, he thought, seeing that they have four feet each against my two. Otherwise, though, they're a seedy-looking bunch!

The Delthigans were dressed in tunics of dull-colored, sleazy material, belted at their narrow waists with bands of something resembling straw. Their three-toed feet were wrapped in cloth puttees, but on the middle sections of their arms all wore several bands of metal enameled in bright colors. The spaceman guessed these to be insignia of rank.

During Hane's introductions, Marie slipped in with her notebook. Ramsay stared unhappily at the Delthigans, each of whom examined him suspiciously, first with one eye, then another, then yet another, turning his small, roundish head from side to side in the process. Ramsay noticed that his guests had vestigial crests of thickened skin atop their grayish skulls.

He breathed a sigh of relief when it developed that one of them, Puag Tukhi by name, spoke fair Terran, though with a hissing, clicking accent.

Marie brought Ramsay a list transcribed from Fuller's filmed message. He mentioned one or two items, but Puag Tukhi was bluntly direct.

"We see first new powder-maker from Bormek," he stated forthrightly, fluttering two or three hands at the list.

"I . . . uh, described it, so to speak," murmured old Hane.

"Arrange a demonstration?" muttered Ramsay behind his hand.

"Oh, Mr. Fuller gave instructions for that. We have an old emergency rocket wire as a drone target. The Bormekian ship mounting the thing has been cruising an orbit around Chika. I . . . ah, alerted them."

"Just what does it do?" asked Ramsay.

"You'll see. We can watch on the telescreen over there."

Ramsay passed the invitation on, and they gathered around the instrument in the corner of the room. He noticed that the gray-green skin of the Delthigan beside him showed traces of quite humanoid perspiration, although he himself found the air dry enough to foreshadow a sore throat if he had to talk a great deal. Then Hane had a message sent out to the cruising ship, and Ramsay forgot personal discomfort for a time.

He supposed later that the Delthigans must have been fascinated, though they managed to repress any undue show of interest. As Hane ex-

plained it, the field projected by the new weapon drastically affected the affinity for each other of the molecules of any substance within its range. Its range, he read from notes in a small memo book, had not yet been successfully measured. It did not by any means cause actual disintegration, but any supplementary disturbance—a projectile or even a sudden acceleration—might produce disorganization.

They were treated to a clearly focused view of the target rocket as it entered the field, just as Hane finished remarking that the latter was ineffective if used too close to a sun.

"Watch, now!" he added. "They are going to attempt hitting it with a bullet from a modified rifle."

This, in space, required some doing. Eventually, however, as the Delthigans began to shuffle their many feet like a barnful of restless horses, the nose of the rocket seemed to spread out into a cloud of smoke.

"They promised, if that worked," said Hane, "that they would signal the radio controls to change course."

Sure enough, the stern jets of the little rocket flared briefly a moment later. Briefly, because the entire hull of faintly gleaming metal expanded into amorphous swirls of dust, some drifting off in what was to have been the new course but most continuing along the old curve.

"And what if it nothing disturpt while field on it?" asked Puag Tukhi.

"Probably be all right," guessed Ramsay. "Maybe a few air leaks."

Hane switched off the telescreen and they regrouped at the conference table. Ramsay attempted to turn the talk to his list of possible imports—the thought of such a weapon in the hands of beings known to be contemplating military adventure gave him a chill.

Puag Tukhi, however, insistently brought the discussion back at every opportunity to one point: he was willing to "consider accepting" a number of the Bormekian "powder-makers" if suitable terms could be arranged. Suitable terms, he seemed to think, included Delthigan currency.

As time went on, he gradually modified these offers until they further included supplying Delthigan labor for the Terran mines on the second planet and the purchase of other items. Ramsay's throat got drier and drier while he strove to avoid concluding the agreement.

"You not want gif us only what you want!" exclaimed the Delthigan finally, working his toothy shark-mouth unpleasantly.

"Not at all!" denied the Terran. "I merely wish you to appreciate all the possibilities."

"Appresshiate? Not know wordt."

"I want you to see all the best things. Look—suppose we have a little pause here, so each side can talk things over! We'll regulate the air in another room for you to be more comfortable in, and take it up again in half an hour or so."

After only two repetitions, the Delthigan got the drift and agreed reluctantly to a recess. The Terrans retreated to Ramsay's office, Marie pausing at her own desk.

His first action was to demand that the station operators get him a face-to-face call to J. Gilbert Fuller, on Bormek V.

"I don't like it a bit!" he said to the old man while they waited for the call to go through. "Let them have enough of those gadgets, and we'll find ourselves in the mines of Delthig II one fine day, and these squids out to conquer the stars."

"Dear, dear!" muttered Hane. "I *do* imagine they have something of the sort in mind. Still, Mr. Fuller ought to know what he means to do."

"That's the one thing that keeps me here at all," admitted the spaceman. "He's sharp, I know. And yet . . . he's never been in this system. Looking over the data on Bormek V is one thing; but it's another to see that self-perpetuating clique down there sweat-shopping their whole planet into an armed camp."

Marie Furman entered from her office, carrying a drinking glass and a small bottle.

"You'd better gargle with this, Mr. Ramsay," she said sympathetically.

He accepted gratefully and moved toward the small lavatory adjoining the office. As soon as he had his mouth full, his brunet secretary informed him that the operators had reached the Bormek station, only to

learn that J. Gilbert Fuller had gone off on business of his own with no word except that he would be back presently.

Ramsay choked, as was doubtless intended, he realized. By the time he was physically capable of voicing the expressions that rose to his lips, he had regained a measure of censoring self-control.

"That's fine!" he groaned. "What'll I tell these squids?"

"Well . . . this is just a personal opinion, mind," said Hane, "but perhaps it would be best to strike a bargain with them."

"But those projectors!" objected the spaceman.

"Projector," Hane corrected. "Only one has arrived, so far."

"You could promise more, then sort of forget about them," suggested the girl.

"Too dishonest," Ramsay vetoed. "Not only that, but I don't want to be here when they yell 'foul.' Those octopuses are too touchy now. Imagine if they thought they'd been swindled!"

"True," agreed Hane. "I can't think of any excuse to turn them down."

Ramsay paced the office several laps without locating any inspiration.

"All right," he sighed finally. "I'll go back in there and try to palm off on them Fuller's precious tele-screens and every other equivalent of glass beads he's sending. Maybe they'll draw the line at some of the junk. Then I can get insulted and



back out!"

It seemed to Ramsay that the ensuing session with Puag Tukhi lasted one or two normal lifetimes. Long before the close, Marie had frankly curled up in a chair by the wall and gone to sleep. Hane retired to a seat by the telescreen in the corner an hour later, where he maintained a precarious position by jerking upright from time to time when his chin touched his chest. Even one of the Delthigans, despite censorious glares from his chief, rested his round head on the table and kept only one heavy-lidded eye open.

When at last Ramsay stumbled into his sleeping quarters, having seen the native officials off to their

ship and called a pair of communications operators on night watch to carry Hane and Marie out, he was too exhausted to bother checking either the time or the contract.

It seemed only a few minutes before the persistent chime of the intercom visor beside his bed bullied him into wakefulness. He answered groggily, to discover that it was another day and someone wanted to know what to do with three shiploads of Vozaalian telescreens and one of scarlet dye from Fegash.

"Any of my interplanetary ships here?" he croaked.

"Five, Mr. Ramsay, including the *Sprite* that you came in."

"Load them all for Delthig III, and when they come back up, have

them stand by in case the Delthigans bring cargo for IV. And keep a good record; I'm going to bill the B. S. T. for every bit of this!"

He cut off, then called the building guard with orders to wake Marie and Hane.

"If Ramsay can't sleep," he muttered, weaving toward his shower, "*nobody* sleeps! Ugh, my throat! I better gargle again."

At length, dressed in shirt and slacks, the latter tucked into high spaceman's boots, he went to his office. Hane and Marie, the latter still in slacks, appeared presently. The girl proved herself the efficient secretary when the breakfast she had ordered arrived a few minutes later.

"The first thing I want to check," said Ramsay, brushing toast crumbs from the handwritten agreement he had copied down the night before, "is where we wound up. I seem to remember something about scrap metal for the Delthig IV plants."

"Paug Tukhi offered to exchange old weapons for the Bormekian projectors," Hane recalled, "along with other scrap. That was just before his little speech about how such avaricious bargaining as yours would never be tolerated in *his* society."

"I was hoping he'd get mad and leave," said Ramsay.

It appeared that the Delthigans had even accepted Fuller's useless telescreens. They were to distribute all twenty million—if they could—and act as brokers for the Terrans.

Guess they didn't like that, Ramsay reflected, but it was better than

having inferior aliens on their sacred planet!

The Delthigans had also contracted for the building of several hundred spaceships which, as Hane put it, *might* be delivered to them. In partial return for these, the thousands of Bormekian weapons ordered, and certain other items, they were to supply scrap metal and drafts of workers for Terran projects on II, IV, and Chika.

"I'm not sure I like that," said Ramsay. "They'll repossess both if they ever clip us; and I don't see how we'll get the cash balance out of them."

A few luxury articles such as dyestuffs and automatic household gadgets had been ordered. Ramsay shrewdly estimated that the amount of these would perhaps be sufficient to supply the upper crust of the Delthigan regime—certainly no more.

But the main thing was the projectors.

"They didn't really fight against the other junk," Ramsay commented. "That worries me. What in the world would they do with those telescreens? They just took them to get the weapons."

"If I know them at all," retorted Hane, "they will distribute the sets as evidence to their people of progress toward the better life most of them despair of ever seeing."

"And simply promise telecasts in the future," Marie put in. "They won't be responsible if it's the very far future."

"Exactly," agreed the old man,

smiling at her. "And, if you'll pardon my mentioning it, Ramsay, that is how they will pay us for the sets—in the far, far future."

Ramsay nodded.

"Well," he sighed, "I'd better send off a message to be filmed for Fuller if he still isn't back, and tell him about the agreement and their lack of telecasting. He might enter that on the books as an 'out' against the day they default. I hate to say so, but he's going to need *some* excuse this time."

Within a few days—reckoned by Terran standards because the satellite rotated once in its three-week journey around its planet—he began to suspect that his customers were leaning over backward to stay in the right. Ship after ship, Terran and Delthigan, arrived to discharge scrap metal and shuttle other goods down to Delthig III as fast as the big interstellar ships could be unloaded. One Delthigan official delivered a statement showing a staggering balance in *dels* banked under Ramsay's name, it being illegal for such a sum to be taken beyond the Planetary State's control.

"Things go so fast around here," Ramsay said to Hane, "that I wonder if they're just breaking up the telescreens and shooting them back as scrap."

"That was a fair theory," admitted the older man, "up to yesterday when those boys unloading found live shells to fit one of the junked cannon. Did you see where

they were taking potshots at the hill out there?"

Ramsay snorted.

"The squids don't seem to care what they send. Have we got barracks up for the Delthigan labor gangs that arrived?"

"Yes," Hane chuckled. "I faced them with the alternative of sleeping out, so to speak, and they fell to with a will."

"Let's keep them here," suggested the spaceman.

He eyed the fast-growing settlement in his charge. It required a lot of labor to keep the spaceport unclogged.

"They were supposed to go to the mines on II," Hane reminded him, "as soon as they built barracks for more transients."

"I'd just as soon avoid that as long as we can. I can picture a horde of so-called 'laborers' running amuck when a Delthigan fleet approaches that planet. But here, they'd be some use."

"They'll work hard," Hane agreed. "They look well broken-in for that."

Slaves, thought Ramsay. *That's what they amount to. Wish I had nothing to do with handling them!*

He could see the mottled, brownish face of Delthig III above the low hills of the moon. He wondered if a telescope would show the fires and lights of hard-driven factories on the night side. He caught himself imagining that malevolent, brooding eyes watched him from those shadows.

What's it like to live there? he

wondered.

He tried to picture the hopeless drudgery of building a Planetary State on inadequate rations under the monotonous bludgeoning of propaganda designed to dull the senses to the lack of food, or clothing, or freedom, or pleasure, or the slightest respite from the slavery.

No wonder they work so hard on the new domes, he thought. They must be happy to be even this far away from the surface.

"Have them put up more shelters," he said to Hane, "and quarter incoming gangs in them to take over the stevedoring. I can't ask our own men to go on short-handed any longer."

That noon, he tried to catch a nap in his room, but found himself too restless. Putting on a spacesuit, he made a tour of inspection out to the end of the expanding port, where a Delthigan ship was unloading more scrap.

"I wish I knew why they keep sending the stuff," he said to Marie in the office upon his return.

"I guess they call the guns obsolete now. Isn't that what they do when somebody builds a bigger one?"

"Bigger what?"

"Bigger anything. That horrid thing from Bormek made their guns obsolete."

"Yeah," he said, sitting down slowly, "but they usually don't throw away the old till they have twice as many of the new. And

Fuller hasn't—thank goodness!—sent us any more of what Puag Tukhi calls 'powder-makers.'"

"Well, be that as it may," said his secretary, "I found out for you about the ship that parked here last night. You'll never guess!"

Ramsay ran the fingers of his left hand through his close-clipped black hair and looked up at her with an expression of forced patience.

"Oh, all right, then!" exclaimed Marie, tossing her head slightly. "I'll tell you before you start demanding again why somebody doesn't at least *try* to help you keep track of what goes on around here."

"Please do!" said Ramsay succinctly.

"It's a television station!"

He drummed his fingers on the desk.

"Very funny. Do I have to go find out for myself?"

"You could; I told them it would be all right to have some Delthigans extend a plastic tube out to the ship. And it's just what I said!"

"A television station?"

"Well, a ship sent direct from Bormek by Mr. Fuller that's outfitted to telecast programs. The man in charge, Mr. Neuberg, explained how they can send almost as far as your spaceport communicator, but entertainment, too."

Ramsay dropped both hands to the desk and slumped back in his chair. He shook his head slowly, resignedly.

"That's what I get," he murmured, "for telling him about un-

loading his telescreens when I griped about the projectors."

"I think it was awfully clever of Mr. Fuller to manage it so soon," said his secretary. "They've already made a local film to telecast to Delthig III. *I'm* in it!"

"When they don't get those projectors, they'll come up here and blow my head off," said Ramsay gloomily. "And *he* sends me a telecasting station! All wrapped up in a spaceship so it can skip out fast when the shooting starts!"

"They took pictures of me setting up an automatic stove and putting something in it to cook," said Marie. "Mr. Neuberg wanted to show things actually being sent to the Delthigans."

"I'd like to see it sometime," said Ramsay, when she waited expectantly for comment.

Marie brightened. She ran out to her desk and returned in a moment with a small telescreen.

"Where did you get that cracker box?" demanded Ramsay.

Marie smiled reminiscently and pushed back her dark hair after turning the set on.

"That's what we're sending to Delthig. One of the boys snitched one for me out of the last cargo."

"You leave 'the boys' alone!" ordered Ramsay severely. "It's unfair to match them with something like you after they've been at the mines so long. Try your talents on me, if you need practice."

"I couldn't have the *boss* stealing telescreens, could I? What would

Mr. Hane say? Oh, look! There I am now. Mr. Neuberg said he's going to repeat it with his other films until every Delthigan has seen it."

"That means almost fifteen million already," said Ramsay, glancing at a crude chart of the spaceport's traffic.

"Mr. Neuberg says more than that. This thing only receives on one channel, but it will still be a great novelty on Delthig III. He says there ought to be up to two hundred watchers to each set, maybe more."

Ramsay decided not to bother estimating mentally the percentage of the Delthigan population being titillated by Marie's conquest of an apple pie. He noticed that she wasted a lot of material, and hoped Neuberg's food locker held more apples.

"Mr. Neuberg said," she defended herself, "that I should set the machine to remove thick cores. It made a better picture, and he could demonstrate the garbage disposal attachment."

"I don't suppose you brought a piece of the pie back with you?" asked Ramsay hopefully. "Oh . . . *they* ate it all, huh?"

He watched the program give place to another film, a description of Terran home life. The film family's chief problem in life seemed to be whether to travel to Mars or Venus for Papa's vacation.

Here I sit half-starved on rations brought from the mining domes, thought Ramsay, and she doesn't even bring me a slice of the pie!

The door to his office was thrown open. Old Hane hustled in at an unprecedented pace. His scanty white hair was disheveled.

"Puag Tukhi is coming in for a landing!"

"What's the matter?" asked the spaceman.

"He didn't say, but he sounded disturbed over the radio. Do you think it might be, in a nutshell—the projectors?"

"Very likely," said Ramsay, groping for a good excuse.

They went outside the building to watch through the plastic side of the dome as the Delthigan ship landed. A pressurized truck trundled out to pick up the official, and trundled back to the dome with maddening deliberation. It halted to discharge its passenger at the entrance to the inner building.

Puag Tukhi restrained himself with obvious difficulty until they had gone inside. In Ramsay's office, rapid denunciation in hissing Delthigan.

The others looked at each other helplessly.

Puag Tukhi stuttered into Terran.

"I stronger orderss haf to make protests!" he declaimed.

"What's wrong?" asked Ramsay innocently.

"Wronk! Will show what iss wronk!"

He bounded across the office on his four stringy-muscled legs to the telescreen. He switched it on.

"Thiss you gif us. But not ssay to

haf picturess on! What trouble you make!"

The current program, Ramsay saw, was another in home economics starring his brunet secretary. This time, it featured an automatic vacuum cleaner that all but thought for itself.

"What's wrong with that?" he asked.

Puag Tukhi pulled himself together and wiped perspiration from around his chinless mouth. His three eyes glared and the greenish tone of his gray skin became more pronounced.

"Iss not to matter why iss wronk with it! I haf now my superiорss enough trouble to worry about. Musst also explain to you? Instrumentss were *display*, not for use!"

Ramsay relaxed slightly. This was something he thought he could handle. It might even be useful in keeping the Delthigans' minds off other matters, such as nondelivery of Bormekian projectors, or holding laborers on Chika.

I'll push this as far as it will go, he decided. *Now, how would Fuller do it?*

"I do not recall any part of our agreement dealing with telecasting," he said smoothly.

Puag Tukhi stared straight at him, then turned his round head from side to side to examine the Terran through his other eyes. He opened his mouth twice, displaying numerous pointed teeth, before he succeeded in voicing an answer.

"That iss what I ssay!" he com-

plained. "Therefore, you musst not do thiss! Makes for me trouble. Se-riouss trouble!"

"You admit you did accept our telescreens," asked Ramsay.

"Yess."

"And, as our agents, distributed them among your people?"

"Yess, yess! We musst, understand, gif them some sign of progress. They work . . . very hard."

"But television is communication," Ramsay pursued coolly. "That implies two parties, televiewer *and* telecaster. The receiver is useless without a telecast to receive. Correct?"

"Yess, but—"

"Therefore, your acceptance of our telescreens *implied* admitting our right to telecast to them! You see?"

Puag Tukhi hesitated. He gripped two of his three-fingered hands into a tight knot and ran a third raspily over the thickened hide of his vestigial crest.

"Of course, if you like," said Ramsay jauntily, "we can stop the whole business. Keep the telescreens and I'll cancel the other shipments!"

That'll fix him! he thought. He noticed Marie looking at him admiringly, and wished he had a mustache like Fuller's to stroke.

Then Puag Tukhi said something that shocked him out of his smugness.

"But *why* you do thiss to me? I haf made all things as agreeet. For

telescreens, millionss of *dels* paid. For fancy thingss to official class, I haf sent to Chika herdss of wronk-thinkink prisonerss to work—you not need count what you send back! And for Bormek powder-makerss, haf sent loadss of scrap gunss. You . . . you . . . they will put me in the *mines*! Maybe with no teeth and one eye left! Why you make for me such trouble?"

Ramsay wondered if he sagged visibly.

They're getting them! he thought, licking suddenly dry lips.

"I . . . uh . . . I don't want to make . . . trouble for you—"

He groped his way around a corner of his desk and sat down.

That Fuller! He's been sending them the things direct from Bormek. It can't be anything else. That's why they're shipping discarded guns for scrap; otherwise they'd keep them. And ME he sends a telecaster. Does he want to get me killed?

"As I . . . uh, was saying," he stumbled on, "I'd be glad to hear of a way to take the heat off . . . off you, Puag Tukhi, that is. There must be a way to . . . ah, protect your interests."

Puag Tukhi sighed gustily, blowing out a little spray of moisture. Ramsay looked to Hane for help, but that gentleman gazed steadfastly out the window.

"Maybe—" Marie began in a subdued voice.

"Go on!" urged her employer.

"Well, back on Terra, they have

that custom of giving equal time to both sides of a question. You know, like election speeches, and that sort of thing."

"That's it!" cried Ramsay. "You, Puag Tukhi, go back and tell your government that if they send us their own films up to Chika, we'll telecast them along with ours. Fair enough?"

The Delthigan regained some of his composure, and permitted Hane to escort him to the truck.

Ramsay immediately pounced upon the intercom. By good fortune, he learned, a line had been laid to the mobile television station. He asked for Neuberg.

"I'm Ramsay, in charge here," he introduced himself to a balding man with dark, expressive eyes set in a pudgy face.

"Ah, yes," the other beamed. "Don't worry about a thing, Mr. Ramsay. We're plastering that planet with pix twenty-four hours a day. Got films to last a month."

"Yeah . . . well, I'm going to get a few more for you."

Long before he finished explaining, Neuberg began to shake his head disapprovingly. Ramsay paused when the man's jowls reached the quivering stage, Mr. Neuberg pointed out that he had a definite schedule to fill.

"But this is necessary!" shouted the spaceman.

"I sympathize with you, Mr. Ramsay, but I have strict orders from Mr. Fuller. He relies upon me to carry them out."

"But . . . oh, all *right!* I'll get him to O.K. what I want. Will that satisfy you?"

"Entirely," answered Mr. Neuberg primly.

Ramsay flipped the switch and rubbed one hand across his face.

"That's an interstellar ship coming in," announced Hane, returning.

"Marie!" snapped Ramsay. "Come away from that window and get me a face-to-face with Fuller. Right now—before I pop off with apoplexy and cheat the Delthigans of their revenge!"

She sped out the door. Hane continued to watch out the window as Ramsay tramped about the office. He was still pacing ten minutes later, when the girl returned.

"They can't get him," she reported.

Ramsay reached her in two strides.

"What do you mean? Are communications out?"

"No, no; they got through to Bormek V for me. Mr. Fuller had stopped back and received your last message, but he went off again to arrange something else, and . . . and . . . the Bormekian operators can't reach him."

"Oh, *fine!* Did they say he was doing anything about those projectors?"

"Yes, I asked. They said he ordered them sent directly to Delthig III to speed up delivery as much as possible."

The silence in the office became so marked that they could hear the working of the air lock outside as the truck came in off the field.

"I quit!" said Ramsay.

He turned to Hane.

"What ships of mine are out there?"

"There *were* two; but they blasted off for IV just before Puag Tukhi came."

"When are more due in?"

"A fleet of four might be here by tomorrow night."

Ramsay groaned.

"Worse than I thought! I *can't* quit before that squid will get back with his story and maybe even have their films on the way up here. They have cinemas; they must have something ready."

"Couldn't you explain to Mr. Neuberg?" asked Marie.

He looked at her.

"You know," he said thoughtfully, "you're much too pretty a girl to be just a secretary. I ought to make you an executive assistant."

"Why, thank you, Mr. Ramsay. I—"

"And the first execution you can go to will be Neuberg's—unless you can convince him Fuller sent me permission!"

"But—"

"I tried to tell him, but he *has his orders*," said Ramsay, urging her toward the door with a firm grip on her arm. "Now, *you* try it. All you have to do is make him forget to ask for a look at the filmed message."

"I could offer to act in another

demonstration."

"Good, good!" he approved, marching through her small office and easing her into the corridor.

"And . . . uh, change those baggy slacks, will you? Put on a dress! You *did* bring one along, I hope?"

"Why, no, Mr. Ramsay."

She looked down in dismay at the criticized apparel.

"I thought . . . with the space trip and all . . . I only brought a few pairs of slacks."

"Well, go put on a nicer pair, then!" Ramsay snapped. "And . . . oh, you know what to do. You talk me out of a raise every couple of months!"

He started her off down the corridor with a little shove. A short, sturdy young man wearing a space officer's cap rakishly slanted atop curly yellow hair stepped politely out of her way in his course up the hall. He paused to look frankly over his shoulder, then approached Ramsay.

"I'm Donovan," he said. "Chief pilot of the *Silver Comet* from Cagsan IX. You Ramsay?"

"That's right."

"I got fifty million ears for you."

Ramsay looked at him.

"How's that, friend?" he queried.

Donovan stared back curiously. He flipped the pages of the manifest in his hand.

"Frozen corn. On the cob. Fifty million ears tabbed as a luxury item for . . . lemme see here . . . 'for government officials of Delthig



III.'"

Ramsay shook his head slightly, and Donovan's face swam back into focus.

"Mr. Fuller, of the B.S.T., said—"

Ramsay wearily turned away, reaching back to point at the office behind him.

"Tell Mr. Hane all about it," he pleaded. "I'm . . . it's my watch off. I believe I'll go lie down a little while—"

Just before he reached his quarters, he heard running footsteps behind him. One of the communications men caught up, waving a message memo.

"An alert from Delthig III, Mr. Ramsay."

"What!"

"That high mucky-muck that was up here talked to them from his ship, and they sent a message saying they're shooting some movies up here by mail rocket."

"Oh," said Ramsay. "That will come under Mr. Neuberg's department. Take them to his ship when they land and let him figure out what to do with them. Er . . . just a minute!"

"Yes, Mr. Ramsay?"

"You techs . . . ah, generally have something stowed away for every emergency. Happen to have anything to . . . discourage a headache, if you see what I mean?"

The operator grinned and winked.

"I'll look around. Might be something in the files."

The next morning, awakened again by the chiming of the intercom beside his bed, Ramsay found that he had a real headache. The motion of sitting up in bed caused him to clutch frantically at his temples.

The *bing-bing-bing* persisted. When he reached for the visor, he managed to knock a large but empty bottle to the floor. He fumbled at the set until he had the video cut off, then answered the call.

"Ramsay?" demanded Hane's voice. "Are you there?"

"Mostly. What's up now?"

"We can't quite tell," said Hane, "but I think you had better get over to the office."

Ramsay switched off, wondering if he could get to the shower without dropping his head. He scowled reproachfully at the empty bottle on the floor and stepped carefully around it.

When he reached his office, he found Hane and Marie waiting, with a pair of television operators loitering in the background. Hane waited for Ramsay to ease himself tenderly into his chair, then gestured for the pair to tell their story.

Ramsay listened with growing dismay to the account of an audio message just received from Delthigan III.

"And it sounded like Puag Tukhi, you say? But you're not sure?"

"No video, Mr. Ramsay," the operator shrugged. "Besides, like I say, he sort of got off the track after saying something about you making

trouble."

"That," explained Hane, "was where he lapsed into his own vernacular, so to speak. I listened to the transcription, and one would have to be well versed in Delthigan to understand it."

"Why?" asked Ramsay. "Was he that excited?"

"I think he was cursing you!"

"What?"

"It was too fast for me to catch, and some of the words seemed very strange; but I judged mainly by his tone of voice."

Ramsay absorbed this with a poker face, and dismissed the operators to monitor the Delthigan communication band. When they left, he rested his head in his hands a moment before asking, "Either of you got any idea what we've done this time?"

"Everything seemed fine," said Marie blankly.

"We received another shipment of laborers," said Hane thoughtfully. "Whatever happened must have done so since they left the planet. Then, too, the Delthigan films for Neuberg came in by radio-controlled rocket."

"That was last night," Marie told Ramsay. "You . . . er, had that 'Don't Disturb' sign on your door, so we just took them over to Mr. Neuberg."

"What were they about?" asked Ramsay absent-mindedly.

"I don't know. He said he'd start using them right away—after I

talked to him again, for a little while."

"There might be one on now," suggested Hane.

The girl walked over to where the cheap, one-channel set rested on a file cabinet. She turned it on, and in a few seconds Ramsay began to see what was happening.

By luck, they caught the end of a Delthigan propaganda film which Neuberg's technicians had evidently managed to project and relay. The language was too fast for Hane, the only one of them who knew any Delthigan, but the general import of the speeches was clear.

Those shots of factories! thought Ramsay. No real workers ever looked that happy and dedicated to their jobs. And the farm scenes between ones of the old squid with the star-maps—looking at the stuff growing isn't filling any Delthigan bellies, but the whole thing is obviously a shot in the arm to try to convince them they're well off.

"I liked Mr. Neuberg's pictures better," Marie announced. "He actually had some made of all the things we're sending down there—telescopes, the gold and silver braid for the generals, and even a piece of cloth being colored bright red with some of that dye from Fegash."

Ramsay thought of the dingy gray loincloths of the laborers sent by Puag Tukhi. Even that official, he recalled, had worn a tunic of dull and sleazy goods.

What a deadly parallel! he thought.

"And did he show any projectors?"

"No," Marie told him, "there weren't any pictures of those, but he did film a good one of the old scrap dumps out behind the domes. He wants the Delthigans to know they're paying for all their imports."

"Paying, all right," murmured Ramsay, "but who down there is doing the receiving?"

"I saw some of them," remarked Hane. "Ones about household gadgets and food. He even had our charming executive assistant nibble on a couple of ears of corn."

"I don't suppose," commented Ramsay deliberately, "that anyone explained in the film that the cobs aren't edible?"

They looked at him blankly. He tried to imagine how it would feel to be a starved, overworked Delthigan, in a steel mill, say, and to witness a blithe being from some fabulous world of plenty toss aside food that had apparently barely been sampled. He decided that it would drive him frantic.

Hane ran a hand distractedly through his sparse white hair, comprehension lighting his old eyes.

"No wonder they are . . . displeased," he muttered.

"Displeased!" snorted Ramsay.

That Fuller and his outfit! he thought. "*Bureau of Slick Tricks* they call it, huh? Well, he's not as slick as I thought, but he sure got me in a hole!

He switched on his desk visor and demanded Neuberg. After a slight

delay, the pudgy, cheerful face appeared.

"Look here!" Ramsay said sternly. "I want you to cut it out!"

"I beg your pardon!"

"That mixing up Delthigan 'educational films' with corn on the cob! It makes their government look like chumps. Don't you realize that's bad for business?"

"Mr. Ramsay, am I to blame if they *are* a pack of chumps? I have my orders from Mr. Fuller, and—"

Something in Ramsay finally snapped. Half rising behind the desk, he thrust his flushed face close to the scanner.

"*Cut it out, I tell you!*" he belated. "Or do you want me to come over there with a wrench and fix that chatterbox toy of yours so's it won't cast a picture past its own shadow?"

Neuberg's dark eyes widened. Without a word, he faded from the screen.

"Hane!" snapped the spaceman. "Get hold of the foreman of that Delthigan labor gang! Have them start searching through the scrap for live shells and pull out a couple of old guns to match!"

"What are you going to do?" gasped Marie.

"If I were a general from that Planetary State down there," said Ramsay, "I'd be on my way up here now to censor those telecasts. But being the cat's-paw I am, I'm at least going to have the satisfaction of popping *somebody* before this place

gets wiped off the face of Chika!"

Before Hane could reach the door, a siren somewhere in the dome wailed out in sudden urgency. The three in the office froze.

"That's an air leak!" exclaimed Ramsay. "Where's the spacesuit locker?"

He started for the door, but relaxed as the siren cut off. The visor on his desk emitted a series of *bings*.

"Yeah?" he barked, flipping the switch.

"Everything under control, Mr. Ramsay," reported the communications operator who had found him the bottle "in the files" the previous night. "That telecasting ship took off without seeing that the connecting tube was sealed. Murphy's got it air-tight again."

Ramsay muttered something or other in reply and sprang to the window. He could not see the former position of Neuberg's ship, but the expressions of several men outside looking at where it had been confirmed the report.

"Turn that gadget back on!" he told Marie.

The telecast was still going. It flickered and faded as they watched, but steadied again. Neuberg was carrying out his orders—where Ramsay could not interfere.

"Uh . . . I shall see about that ammunition," said Hane after a moment during which the air in the office seemed to vibrate silently.

He went out, looking grateful for the opportunity to escape Ramsay's presence.

The latter realized that he had been scowling across the room for some time when Marie spoke.

"Can I do something?" she asked timidly.

"Huh? Well, yeah. Go ride herd on those operators until they get a radio call through to the planet. If we can get hold of someone in authority, it might still be smoothed over."

Alone, he paced up and down the office for a while. When that failed to help, he sat at his desk with his head cradled carefully between both hands. He realized with surprise that his headache had disappeared.

The advantage of a good fright, he reflected. I only wish I could see Fuller here too!

He punched viciously at the intercom switch. Marie answered from the communications room.

"Any luck?" he demanded.

"Not yet."

"Then have them see if they can reach Fuller on Bormek V!"

Time passed. A report came back from Bormek to the effect that Mr. Fuller was expected there very soon.

Delthig III radio stations maintained an ominous silence.

Ramsay took presently to making short excursions around the outside of the building, peering through the plastic dome at the spacesuited figures of Hane and some Delthigans out at the heaps of scrap metal, or up into the dark sky.

Finally, Hane returned to report that two cannon had been loaded

and put in charge of Terrans from among the spaceport personnel.

"The Delthigans seemed only too willing to help me," he told Ramsay. "One wonders if they are not somewhat resentful toward their present masters."

"One wonders what's wrong with them if they're not!" retorted the spaceman.

Bing-bing-bing-bing!

He switched his television on, and saw Marie's pale face.

"The techs say they've picked up a ship approaching in a landing orbit," she reported breathlessly.

"How many?" asked Ramsay, beckoning to Hane.

"Only one, but it's acting funny, not sticking to a smooth curve, they say."

"Evasive action!" he guessed. "Hane, tell your men out there to be ready. Marie, you'd better get back here in case something happens."

He switched off and ran to the window, but nothing was to be seen. After putting through a brief call, Hane joined him.

"Maybe we can stall a few hours," said Ramsay. "When my four ships get in tonight, we can fold our domes and silently run away."

Bing-bing-bing-bing!

"Now what?" he demanded of the operator whose image he found on the screen.

"We have Mr. Fuller for you now."

"No!" exclaimed Ramsay with heavy sarcasm. "What did he stop flitting around for—to hear me make

my will? Put him on!"

He agonized through several seconds of coalescing images as the various operators handling the interstellar call withdrew themselves. Then Fuller's bland face looked out at him.

"Well, well!" said the B. S. T. agent heartily. "Heard you were trying to get me. I was rounding up a few things on the next planet. Everything going all right?"

Ramsay opened his mouth, closed it, and brought both fists down on the edge of his desk.

Where should I begin? he asked himself. Shall I tell him what a mess he's made while I try to think up a good name, or shall I call him the first thing that occurs to me?

Fuller ran one hand over his golden, slightly wavy hair. Ramsay thought that he looked a little tired, as if he really had been hustling from one planet to another.

"One little detail seems to have gone wrong," the spaceman said, biting off his words carefully. "Somehow, the Delthigans seem to have taken offense."

"To what?" asked Fuller calmly.

"To me in particular and Terrans in general. There is a ship maneuvering at us now. Don't be surprised if this call is cut off suddenly. You sent a gentleman named Neuberger—"

The door was flung open. Marie ran in.

"It landed!" she shrieked. "The Delthigan ship. Some of the men took the truck out to it while the others covered it with the cannon."

"Hold on!" Ramsay grunted to Fuller.

He bounded across to the window, callously flipped Hane to one side and the girl to the other, and peered out. The pressurized truck was just coming out of the air lock. As he watched, five figures alighted. The trio of four-legged ones marched briskly toward the entrance of the building. They were dressed plainly, even for Delthigans.

"Those are no ambassadors," said Ramsay. "Hatchet-men is more like it. Marie, Hane, get out of here!"

"No!" protested the girl.

"Go get help!" Ramsay rephrased it, which sent her running through the outer office and into the corridor.

"I'll make sure those guns are ready," said Hane with unusual verve. "If they make trouble, they'll never take off!"

Left alone, Ramsay became aware of a plaintive demand for information emanating from his desk instrument. Fuller was close to betraying concern as he vainly attempted to see something besides the wall behind Ramsay's chair.

The spaceman seized the visor and turned it around, treating Fuller to a clear view of the doorway as the three Delthigans churned through it.

They clumped to a halt. The one in the middle, a lean individual with a jagged scar climbing up over his crest from between his right and center eyes, stepped forward.

"Ramsay, the Terran?" he demanded, in an accent as bad as that of Puag Tukhi.

If it's the last thing I do, Ramsay promised himself, I'm going to punch that middle eye right through the back of his skull! I'm fed up with these squids!

He moved forward, clenching his fist. The Delthigan apparently misunderstood the gesture for one of assent.

"I am Yil Khoff," he said. "Ssent we are to discuss trade contract."

Ramsay heard Fuller murmur behind his back, "Find out what they want." He unclenched his fist and waited.

"We haf decided not want all thingss comink. You can ssend big shipss . . . big shiploadss grain foodss?"

"Tell him 'yes,'" advised Fuller from Bormek V.

"It can be arranged," said Ramsay warily. "What about the projectors?"

"Pro-jek-torss?"

"Powder-makers."

"Not want; will gif back. But not ssend for mines more workers."

"But you *are* going to pay? We have an agreement!"

"Don't worry about it," said a small voice behind Ramsay.

The Delthigans twitched their flappy ears and eyed the spaceman askance. Yil Khoff laboriously attempted to explain.

"We not bound by promiss of former gufferment."

"Former government!"

Ramsay stepped back to lean one hand on his desk.

"We know . . . iss-hard to tell to persson like you. Will maybe not understand, but we haf by force new rulersss made."

"A revolution!" breathed Ramsay.

He saw two wrench-bearing operators coming through Marie's office, followed by Hane and the girl. He waved them inside.

"They had a revolution," he announced, and his face felt queer to him until he realized that he was smiling.

"Not know word," admitted Yil Khoff after a futile consultation with his companions.

"You threw out the old officials?" Ramsay prompted.

"Threw out?"

"Deposed . . . replaced—?"

"We *shot* them!" said Yil Khoff firmly. "Was very mad-makink how they from you got such wunderful thingss, but we still starfed. For what? For big promiss! Nothing more behind!"

Ramsay glanced at the desk visor beside his elbow. Fuller blandly returned his smile.

"Mr. Hane," said Ramsay, "will you see that our friends have a comfortably dry room in which to rest until we can discuss new arrangements?"

"Gladly," beamed Hane.

"Perhaps you might even scare up some of that frozen corn. I don't imagine *all* of it got through to Delthig III."

One of the communications men winked. He and his friend slipped out hastily. Hane led the visitors in their wake as Ramsay turned to face Fuller.

"This is all very interesting," said the B. S. T. man, "but it costs a lot of credits. You just don't get someone in a face-to-face across two light-years and then casually tell them to hold on while you settle another matter."

"Aw, the B. S. T. can afford it," retorted Ramsay. "You'll get it back in this system, if I know you!"

"We expect to," said Fuller. "I should like to make sure of it, however, by having you and Hane handle the trading—at a good commission, of course."

Ramsay, seeing his elderly assistant returning through the outer office, relayed the offer, remembering that he had profited enormously the last time he had assisted Fuller and the Bureau.

"I should say . . . ah, grab it!" replied Hane, nodding to the B. S. T. man. "Incidentally, Mr. Ramsay's other executive assistant seems to be much admired on Delthig III."

"Me?" asked Marie.

"Yil Khoff says every soul down there is talking about kitchen movies."

"There's an idea for you," Fuller told Ramsay. "Give her a share and let her handle the household gadgets."

"Thank you, Mr. Fuller," said

Marie. "I thought I was going to have to marry him to get a share of his income."

"Huh!" grunted Ramsay, grinning at her. "That might be arranged yet. I'll see how much you cut into my commission."

He turned back to Fuller.

"Seriously," he said, "you had me scared there for a while. I'm just as glad they did have an uprising down there, even though I don't see how they carried it through. Now I won't have to move my spaceline to another system."

"No, you can stay as our agent till you own Delthig," chuckled Fuller. "Honestly, now, Ramsay, what did you think would happen on Delthig III when the poor, oppressed, downtrodden mass of slaves got a glimpse of *life* via television."

Ramsay stared.

He reached out, turned the visor to face his chair, and slowly walked around the desk to sit down. Marie and Hane came to stand behind him.

"So *you* had a hand in it," murmured Ramsay. "With those tele-screens you were so conveniently stuck with! So nice that they only had one channel, so it didn't even matter if the Delthigans put up a station of their own!"

"The Vozaalians are inclined to be hasty in their designs for mass-produced items," said Fuller complacently.

"Wasn't it taking quite a chance, though?" asked Ramsay.

"The Delthigans were bound to

make trouble sooner or later," said Fuller, looking so satisfied that Ramsay half expected him to thrust out a tongue and lick his chops. "A Planetary State has nowhere to go but out. It seemed only prudent to supply the little push that would cause the trouble to fall on their own heads."

Ramsay sighed and shook his head admiringly.

"No wonder they were so hopping mad about those telecasts of Neuberger's. Man, but those films must have been more subversive than termites!"

"How does it feel to start a revolution?" asked old Hane.

Fuller smiled and shrugged.

"Oh, I shouldn't take credit for that," he said. "It was bound to come. But since Delthig III was so overburdened with that Planetary State that it was due for either an explosion or a collapse, the Bureau naturally preferred to see it *implode*."

"Well, the gates are blown in, all right," said Ramsay. "Now to rush in with the goods."

"It *will* open up quite a market," admitted Fuller.

Hane chuckled suddenly, envisaging the future.

"It will be like a big sponge for years and years," he said. "There won't be *anything* that won't sell on

Delthig III. You really opened something!"

"I thought for a while he was going to open it with a big bang just outside this dome," laughed Ramsay. "I won't feel easy until they return all those Bormekian projectors you slipped them behind my back."

"Oh . . . those," muttered Fuller. "I might as well tell you about those."

He seemed to experience difficulty in meeting the spaceman's eye.

"We hoped they would be a surprise to the ruling caste when the serfs swarmed over the palaces. If other artillery had been traded in, the projectors would prevent mass slaughter."

"You had them rigged to blow up?" Ramsay guessed.

"No . . . as a matter of fact, they won't do much of anything if they're not in space or some other vacuum."

"What!"

Fuller nodded.

"With any air at all to act as an insulator, the effective range is about half an inch!"

Ramsay tried to imagine the expression on the alien face of the first Delthigan gunner ordered to mow down the charging rebels. He sighed.

"If you'll excuse me," he said, "I have to go and check our inventory for the big . . . er . . . *opening*."

THE END



MAKING WORLDS COLLIDE

BY R. S. RICHARDSON

It isn't often an astronomer gets a chance to look at worlds in collision—but as a technical expert, he can see the making of "When Worlds Collide."

Time was when the science-fiction fan was an outcast in the world of letters, a poor relation forced to be content with whatever crumbs might fall his way. Twenty years ago to find a cover on the newsstand

depicting a disheveled blonde in the clutches of a Martian was a rare event. Today one sees a dozen or so science-fiction and fantasy covers among the magazines purveying a higher type of literature devoted

chiefly to the intimate lives of screen stars, marriage problems, and "how-to" articles. Publishers are even getting out novels to supply the ever increasing demand.

Not until very recently, however, did the motion pictures discover science fiction. There have been plenty of horror pictures, some fantasy pictures, and a few on the borderline like "The Lost World," "One Million B. C.," and "The Invisible Man." But no trips to the moon or invasions from Saturn. If you didn't like gangsters or musicals, you could stay home and read Jules Verne.

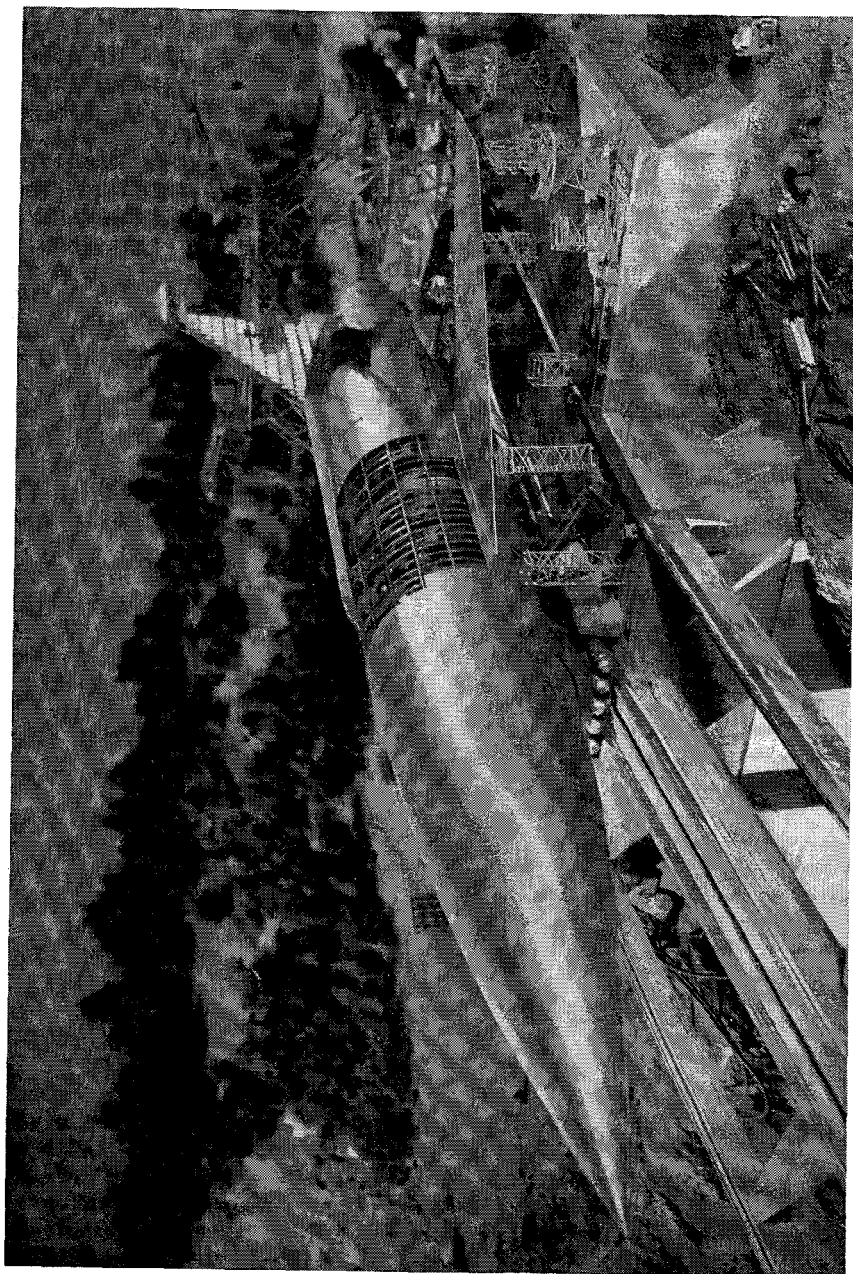
Now all this has suddenly changed. Happy days are here for character actors who can play astronomers and girls who can look glamorous while solving a third-order differential equation. Astronomers themselves are being routed out of their ivory towers. Scarcely a week goes by without some studio calling up for information on the inner workings of an observatory or how long it takes to determine the orbit of a new asteroid or comet.

Plenty of inertia had to be overcome, however, before this new cycle in the cinema got under way. At the Pacificon in 1946 I made a point of asking various people why there were so few pictures based on science-fiction themes. It seemed to me that such pictures would be made if producers felt there was sufficient demand for them. I was told that such efforts had been made in the past but the fans had met with

so little encouragement that they had grown disheartened and given it up. Hollywood was unable to see any future in space travel.

A year or more ago George Pal produced "Destination Moon" based upon a novel by Robert Heinlein. An account of this production by Heinlein himself, who acted as technical advisor appeared in the July 1950 issue of *Astounding*. Few people probably realize what a risky venture it seemed at that time. It was a picture with no big names in the cast, with a radically new theme and a different type of treatment from that which audiences had been accustomed. The science-fiction fans could naturally be counted upon to turn out in force. But how about the bobby-soxers and the tired women shoppers? How about the middle-aged family trade euphemistically referred to by theatre managers as the Serutan group? Would a title like "Destination Moon" mean anything to them? Nobody knew till it hit the screen.

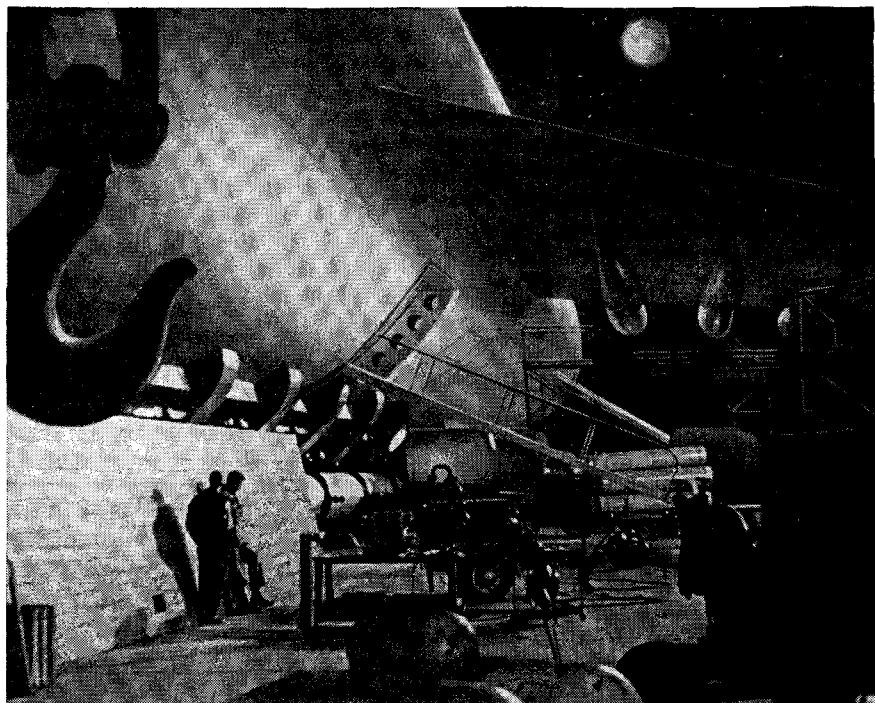
I have been told that the response surpassed the most optimistic predictions. The public was found to be not only ready and waiting for pictures of this kind, but eager to see bold extrapolations into the future. But they had to be well done. The science must be authentic, the characters and situations convincing, and the trick stuff done with careful attention to detail. There is no critic so hostile as the amateur scientist hot on the trail of a technical error.



The spaceship under construction

MAKING WORLDS COLLIDE

85



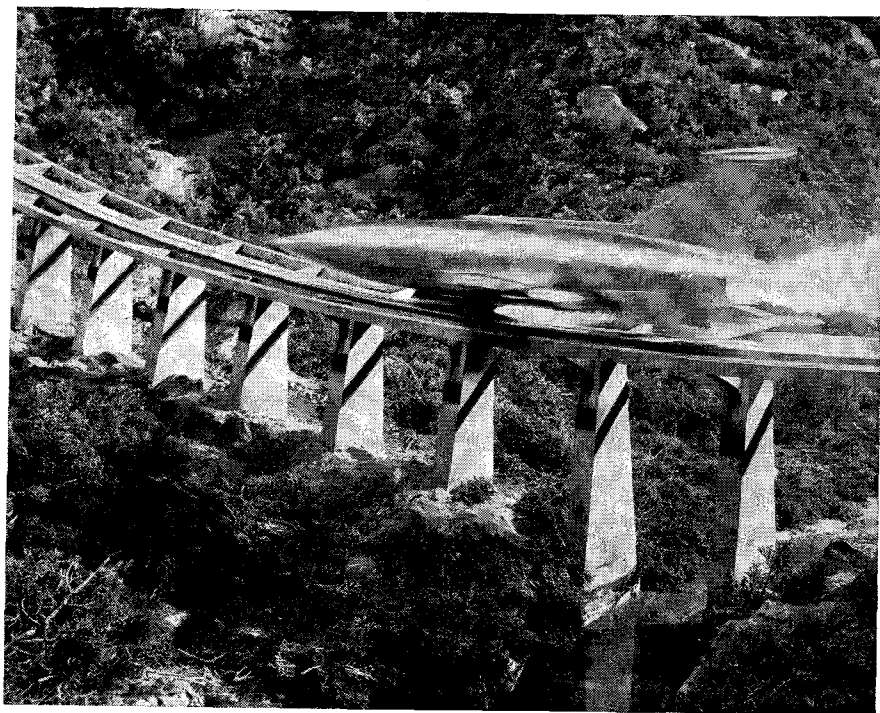
Spaceship construction lot—where models can't be used, paintings with an accuracy and attention to detail surpassing that of an engineer's blueprint have to be used.

Now George Pal is making a parlay from his first success with "Destination Moon" onto another much more ambitious production. His new picture is adapted from the novel by Edwin Balmer and Philip Wylie entitled "When Worlds Collide" published in 1932. (No connection please, with "Worlds in Collision," of which perhaps the less said the better.) "When Worlds Collide" deals with a subject all of us have wondered about at sometime or other since we were kids—the end of the world. Of course, it's foolish to take such a subject

seriously but just for the sake of argument suppose it could happen. How would people react to such a situation? Well, now you can go see "When Worlds Collide" and learn the answer.

Late one afternoon while I was grinding out a least squares solution I got a call from Chesley Bonestell at Paramount.

"I was wondering if you wouldn't like to come over to the studio sometime," he said. "You might like to see some of the art work we're doing on "When Worlds Collide."



Rocket take-off. The story calls for a ramp-type launching run, and, for the movie technician, an immense amount of painstaking detail work.

Also, they're shooting some of the live action showing the evacuation from Earth before the collision with Bellus."

"With whom?" I said, clutching at my grammar.

"Bellus. The little red star that hits the Earth. The rocket is taking off for its companion, Zyra."

"Sounds good," I told him. "How about eleven 'clock tomorrow morning?"

"Fine. I'll have a pass waiting for you."

The next morning which was Saturday I left Pasadena in what

should have been plenty of time to reach Paramount by eleven. Although I have written a book on navigation and some articles on space travel, I am the poorest person in the world when it comes to finding my way around. First I blundered into the wrong studio. When I finally reached Paramount they told me Bonestell was on Stage 3. I found Stage 3 all right but somehow the set didn't look as if they were expecting a collision with a red dwarf star. From the Christmas tree and presents it looked more as if they were expecting a

visit from Santa Claus. Later I heard that it was part of the set for Betty Hutton's picture "Under the Big Top."

I finally located Bonestell about half a mile away on Stage 15. This time I knew it was the right set even before I got inside the door, for a panel on the stage was partially open revealing the gray hull of what was evidently a mammoth spaceship. Besides the usual crowd of stagehands and cameramen apparently doing nothing and drawing large salaries for it, there were dozens of people dressed in a kind of brown hiking costume. Most of them were men and women in their early twenties but there were a few youngsters and middle-aged among them.

Bonestell introduced me to the director, Rudy Maté.

"I'd like to show you some of the sketches illustrating the picture," he said. "Why don't we go over to my dressing room while they're getting ready to film this scene?"

The dressing rooms on a set consist of little boxlike structures on wheels that can be pulled around and parked wherever needed. A young man was in the dressing room reading when we stepped inside. Maté introduced us. "One of our astronomers," he explained. He nodded at me, "Dr. Richardson is also an astronomer—a real one."

He opened the script and began pointing out prints pasted on the pages showing the action involved.

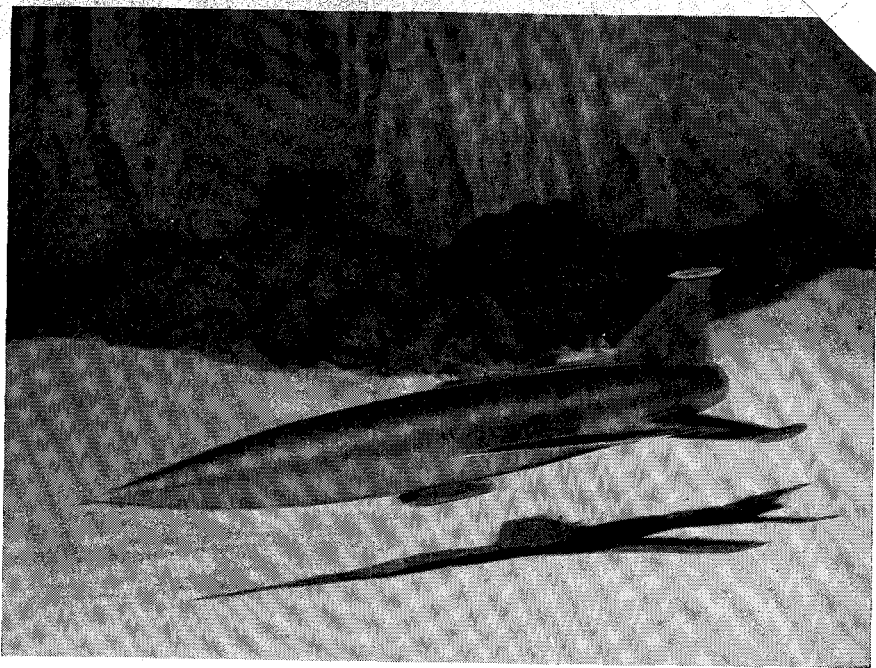
He was so enthusiastic that it was infectious.

"The story is frankly science fiction so far as the collision with Bellus and the rocket are concerned. We are launching the spaceship horizontally instead of vertically, in the usual way. You see it is mounted on a track like the carriage of a roller coaster. Jets beneath the ship supply the initial impulse that starts it rolling down the track. After reaching the bottom it shoots up off into the air at about three thousand feet per second. The jets are dropped as the ship leaves the track and the rocket motors go into action. After penetrating the atmosphere the ship is speeded up to the velocity of escape of seven miles per second."

I examined the picture of this remarkable craft with considerable interest. "What kind of fuel do you use?" I inquired.

"I've forgotten now." He smiled. "To tell the truth we kind of glossed over that part."

Since the take-off for Zyra will probably be the most thrilling as well as one of the most controversial scenes in the picture, perhaps it merits description in some detail. The rocket four hundred feet long and seventy-five feet wide rests upon a track like a railroad car. The rocket is launched by going down an incline at an angle of 10° for three thousand feet and abruptly shooting up the side of a mountain for another two thousand feet. The boost given by the jets plus the speed gained on the incline are supposed



The landing on the new world. The backgrounds, painted by Chesley Bonestell, are extremely effective, and are, actually, an important part of telling the climax of the story.

to send it into space almost vertically at the top of the mountain at about fifteen hundred miles per hour. I will leave jet propulsion experts to argue over the relative merits of launching a rocket by this method versus the standard vertical take-off, but from a conversation I have had with a physicist at Cal-Tech who worked on rocket projects during World War II it is perfectly feasible. One thing is sure: there can be no question of its effectiveness from a dramatic standpoint.

I would like to tell you how the scene depicting the launching was filmed, but after spending thousands

of dollars creating this illusion the studio is understandably reticent about revealing its secrets. All I can say is that this rocket is one of the slickest pieces of machinery you ever saw. (Incidentally, what happens to these devices when they are through using them?)

Since even a one-man rocket is beyond our reach at the present time there seemed no point in trying to give this modern Noah's ark an air of spurious plausibility by throwing in technical references to specific propellant consumption, effective exhaust velocity, et cetera. You either have to accept the rocket as it is or

not at all. If you insist upon strict scientific accuracy, then the picture could never have been made at all. Needless to say, no one could be more acutely aware of the limitations of the rocket than those who toiled for months creating it.

There were other sketches showing the disasters that convulse the Earth as Bellus approaches—earthquakes, volcanoes, and tides rising in the streets of New York engulfing familiar landmarks. I knew that in the past Bonestell had derived a gloomy satisfaction out of knocking over certain buildings in New York that didn't happen to suit his architectural taste. I wondered which ones had been the victims this time.

"All ready," a man said, putting his head in the doorway. Maté picked up the script.

"We're doing the scene showing the escape to Zyra now," he said, as we walked outside. "Only about forty people were selected to leave in the rocket, mostly vigorous young men and women who would be well adapted for life on a new world. In addition to supplies and provisions they are taking along a few animals. The rocket is really a kind of modern Noah's ark."

He handed me a typewritten sheet of paper. "Here are the works they are taking with them on microfilm so that the cultural history of the Earth will not be forgotten. The research department made it out for us."

I ran my eye down the list of

names: the Bible, Shakespeare, Vergil, Homer, Plato, Rabelais, Gibbon, Cervantes—all the authors I intend to read as soon as I have the time.

Maté excused himself and vanished among the crowd around the camera. The average moviegoer is interested only in the actors in a picture. To him they are all important. The names of the producer, director, or head wig-maker don't mean a thing to him. But inside a studio things are different. On a set, for example, the director is the big man. He tells the actors what to do and pretty much how to do it. In fact, there are so many experts needed to get a scene ready to shoot—writers, cameramen, sound effects men, artists, et cetera—that to me the actors often seem of minor importance. Who couldn't stand in front of a camera and say a few lines after all these other people have done the really hard work?

I watched the chosen forty boarding the spaceship for Zyra. A few carried crates containing chickens and geese and one man had a young filly in tow. The animal whinnied loudly as it was led up the gangplank.

"It's anxious to meet its mate already," a voice remarked behind me.

The actors went up the gangplank into the spaceship, walked around to an incline at the side, and came back down on the set. Someone kept calling directions over a loud-speaker.

"A little more speed on the gang-plank, please. I want one man coming down while the others are going up. And that honey by the door there—don't turn around when you go in the ship." (Every girl is a "honey" on a motion picture set.)

They rehearsed it several times before the director was satisfied. "All right," he said at last, as the actors took their places, "this is a picture."

"Rolling," the sound man said.

"Action!"

The actors began streaming into the ship, a new sense of urgency in their gait. You could imagine what a tense scene it would make on the screen with the suspense mounting every second. The audience would feel like taking off, too.

"That's all," someone announced presently. "An hour out for lunch." Even with the end of the world in sight we still have to eat.

Pal had suggested that Maté, Bonestell, and I have lunch together in the studio restaurant. After we had ordered they quizzed me about everything from the 200-inch telescope to the flying saucers. I should mention that neither Pal nor Maté in the least resembles the type of producer or director you commonly meet in the stories about Hollywood. As a matter of fact, so far I haven't met anyone in a studio who does bear any resemblance to their fictional prototypes, which leads me to suspect that such stories are about as authentic as some I have read

about astronomers. Pal is a quiet man of about thirty-five with a rather shy almost boyish air. I have never heard him refer to anything as super-colossal or even merely terrific. Maté, who I believe is French, told me he got into pictures largely by accident. While studying for a degree in philosophy he helped support himself by working as an extra occasionally. Gradually he became familiar with different parts of the picture business until now he can handle practically any job on the set. Perhaps you saw "Union Station" which was produced under his direction.

I told him that in my opinion there was little prospect of finding life on any of the planets except possibly Mars. Astronomers are now working on a motion picture camera for the 100-inch telescope designed to take very rapid exposures during moments of fine seeing that may show the canals clearly. Mars will be close to the Earth in June, 1954, which incidentally would be a good time to release a Mars picture with all the free publicity the event will receive. As for the flying saucers, astronomers are as much puzzled over them as everybody else. The only statement about them from a professional astronomer that I had seen was one in the *Los Angeles Times* attributed to Dr. Gerard Kuiper of the Yerkes Observatory. He said he was extremely skeptical of the mid-geet Martians found inside some flying saucers. He thought the in-

habitants of Mars would more likely be vegetable or insect men (!).

"Did you see the report that a rocket launching ground had been found on the Moon?" Maté asked. "It seems to me it was discovered by an astronomer at Mount Wilson."

"It's a new one on me," I told him. "Anyhow, we're always the last ones to hear these things."

After lunch the scene was filmed in which the millionaire who financed the construction of the spaceship is taken in his wheel chair to watch the take-off. Bonestell and I took cover within the interior of the ship while two wind machines beat down upon the actors below. Even with all the mechanics of the studio in plain sight it was fascinating to watch professional actors going through the actions of men face to face with total annihilation. On the screen the dramatic intensity will be heightened by having shadow bands flickering across the scene.

The motion picture follows the novel rather closely except for bringing it up to date and inserting scenes to make it more plausible. They use a technique similar to that employed by Orson Welles in the Mars broadcast, namely, incidents presented with the reality of an on-the-spot news report building one upon the other to the grand climax. Before you realize it you will be unconsciously identifying yourself with the people upon the screen, with the men and women crowding around the door of a railroad sta-

tion or the little group in a country store listening to the latest bulletin from Washington. They even have a scene showing the United Nations in session debating whether they should build a spaceship to escape the peril hurtling upon them from outer space.

There are no big stars in the cast as it was felt that they would tend to destroy the illusion of reality they had taken such pains to create. For example, it would be hard to believe that the astronomer in the picture was actually an astronomer if you had seen the same actor playing a cowboy or gangster last week. For this reason they deliberately tried to find actors who don't happen to look like actors.

It is in a picture of this kind that the special effects men come into their own, for it is these unpublicized individuals who are responsible for making the most fantastic scenes look credible on the screen. They toil away in obscure corners of the lot unhonored and unsung, sinking battleships, blowing up cities, launching spaceships, and executing whatever other brainstorms the scriptwriter has dreamed up. They are like science-fiction readers in that nothing surprises them.

In "Destination Moon" the effect that probably drew the most criticism was the appearance of the stars. There were too many stars, they were too bright, and they were all the same magnitude. It is true that since there is no atmosphere on

the Moon the stars would appear brighter and there would be more of them. But there would still only be twenty-first magnitude stars. That is, the range in brightness would remain about the same. And they would still form the same identical constellations that we see from the Earth.

I have heard that the job of hanging out the stars was entrusted to some electricians who proceeded to sprinkle little electric-light bulbs in front of the black curtain that formed the lunar heavens with great enthusiasm. When the lights were turned on they did not resemble stars at all. But to rig the heavens over again would have cost a lot of money, so the stars had to be left as they were with the hope that too many people wouldn't mind. They did hang pieces of colored cellophane over the lights, which helped some but not enough. I think you will like the stars in Pal's new picture, for they are made in quite a different way from the others.

Another feature in "Destination Moon" that aroused the ire of many were the cracks in the lunar surface. They looked as if they were cracks in soil that had been flooded and then baked dry in the sun, an obvious impossibility on the Moon. Neither could they be due to lava flow which doesn't form cracks of this kind. The fissures were inserted purely to heighten the effect of perspective without any regard for seology. I have heard, however, that in the old book on the Moon by

Nasmyth and Carpenter the frontispiece shows cracks in the lunar surface very similar to those in the motion picture.

Incidentally, it is a wonder to me that some other scenic effects didn't get into "Destination Moon" that would have been really startling. The set of the crater Harpalus was built upon a platform about one hundred fifty feet long. Stagehands operating lights were stationed at advantageous points in the background. Now and then you would see a cloud of smoke rising from behind a crater or mountain peak as if it had suddenly become active. What worried me most were the cigarette stubs and candy wrappers that people absently dropped on the Moon in between shots. Before filming a scene a grip would usually run out with a broom and sweep off the crater but a cigarette or coke bottle could easily have escaped notice.

With the passing of the years my attitude on technical errors has undergone considerable change. Formerly I was properly superior and scornful if I happened to catch one. Now they seldom strike me as being of much importance. I feel that the important thing is the major over-all effect attained. If the scene is convincing from a dramatic standpoint, that is all that counts. The great classics abound with technical errors.

For example, in the "Eve of St. Agnes," Keats tells us that moon-

light streaming through a stained glass window,

. . . . threw warm gules on Madeline's fair breast,

As down she knelt for heaven's grace and boon,

Rose-bloom fell on her hands, together prest,

And on her silver cross soft amethyst.

Now moonlight is much too faint to be colored by passing through a filter. The fair Madeline would not have been colored but merely illuminated by different degrees of light and shade.

Again in "Ghosts," Ibsen has Oswald conveniently stricken in the last act by a malady which must be a puzzle to the doctors in the house, for you can't find the symptoms in the medical books. Yet are these any less works of art because of the technical flaws they contain?

In "When Worlds Collide" the astronomers at an observatory in South Africa were originally supposed to spot Bellus in the stars of the Big Dipper near the north celestial pole. Bellus now comes in from the constellation of Scorpio so that everything is all right, and thousands of people will be spared the mental anguish of watching some supposedly high-powered astronomers behaving as if they didn't know that the Earth's axis had got twisted around in space. But unless you happened to know wouldn't the Big Dipper have done just as well as Scorpio?

A scene that will be sure to inter-

est space enthusiasts is the chamber in the rocket occupied by the evacuees and crew. The people sit in high-backed chairs facing the pilot and navigator at the control desk. There is an instrument panel in front of them with the usual array of dials which looks impressive but I'm afraid wouldn't bear too close inspection. A special feature is the illuminated chart on which points of light trace curves showing the distance traveled and the amount of fuel consumed.

Since the story revolves about the accuracy with which the collision can be predicted, it was necessary to do a little research on orbit methods. The studio commissioned two men to find out how such calculations are made. They came to Pasadena for a look at my machine, but upon finding that it was the manually operated coffee grinder type decided it wouldn't do, despite the fact that this venerable instrument produced the first elements of the asteroid Icarus. They finally modeled their computer after an electronic brain in the cybernetics department at UCLA, even going so far as to copy down the equations that would be fed into it.

In the story the heavy mathematics is handled by a young girl instead of the usual bewhiskered old professor. I watched the girl who plays this part posing at the control desk for some still shots to be used for publicity. The photographer was trying to figure out some way to get cheesecake into the pic-

ture, but inasmuch as the girl was encased in a rocket-going suit that covered her from head to foot, he finally had to give it up. One good thing about science-fiction pictures is that they should be easy to get by the Breen office. Sex and science fiction have never seemed to mix.

In connection with calculating orbits, there are some remarks in the book that struck me as amusing. Balmer and Wylie sound as if they had a good knowledge of elementary astronomy although lacking first-hand experience in the subject. This is more or less inevitable since authors would soon starve to death if they had to spend a year learning all the inner workings of every character's profession. This leads to some unconscious humor in certain places. The first time the two bodies make a pass at the Earth the larger collides with the Moon, while at the next return we are to be smashed up. Things look pretty dark. Tony suggests maybe the astronomers have slipped up somewhere. But Eve tells him there is no hope.

"There's no error in the calculations, Tony. Too many good men have made them independently."

"Did they all count in the collision with the Moon, Eve?"

"All the good-ones did, dear."

You get a picture of the good astronomers carefully figuring in the disturbing effect of the collision with the Moon; while the bad astronomers shrug their shoulders,

take another drink, and let it go at that.

Several times I have been asked what would be the result of an encounter of this kind. It is hard to say because such a problem has never arisen before. The nearest thing to it occurred in connection with Lyttleton's theory of the origin of the solar system. Readers will recall that Lyttleton assumed the sun once had a small companion, that the companion was sideswiped by a passing star, dragging out a long filament which condensed into the planets. The theory has been critically examined by Luyten and Hill who found it was very doubtful if the planets could have formed in this way. But the problem was so intricate that it was hard to find just what would have been the eventual outcome.

Maté told me what every science-fiction writer has had to find out for himself long ago. That you've got to believe it yourself—really believe it—before anyone else will believe it. He said that the scenes he has directed of people facing the end of the world seem to him altogether real. He believes that in real life people confronted by the same death would react essentially as they do in the picture. He has found it interesting to ask various people what is the first thing they would do if authoritatively informed that the end of the world were at hand. Once he fired this question at Larry Keating who plays the leading astronomer. Keating thought it over quite

a while. Suddenly he got the answer. "I'd call my agent!" he said.

While collision with a star is a remote possibility, it is a disquieting fact that within the last twenty years at least four asteroids have passed within ten million miles of the Earth (Amor, Apollo, Adonis, and Icarus); while on October 30, 1937, little Hermes missed us by a mere four hundred eighty-five thousand miles, or twice the distance of the Moon. And these are only asteroids that we *know* about. What we don't know is how many others may have missed us by a much smaller margin.

We do know, however, that on June 30, 1908, the Earth collided with what must have been either a small asteroid or a large meteorite. The effects of this collision have been investigated by L. A. Kulik of the Russian Academy of Sciences, who led an expedition into northern Siberia where the meteorite struck. Kulik returned with evidence that leaves no room for doubt. He was told that a sound was heard louder than any thunder, and that a column of fire and smoke shot skywards spreading in all directions. The rush of heated air from the blast was so great as to knock down trees leaving them scorched and leafless ten miles from the point of impact. And remember this was only a meteorite. Imagine what the destruction would be if an asteroid should plow down Broadway in New York or Sunset Boulevard in Los Angeles. (Many people would probably consider it

a good thing.)

Everyone I questioned believes that the science-fiction picture has a great future ahead of it, and that it is no passing fad soon to be discarded for standardized adventure and romance. Since scripts of this kind must have been knocking around Hollywood for years, I asked Pal point-blank how he happened to produce "Destination Moon" in the first place.

"Well, you see I have two boys who happen to be very fond of science fiction. From listening to them I began to get interested in it myself. One night at a party I met Robert Heinlein who told me what a great picture could be made about a trip to the Moon. I tried to interest others in the idea but it was a long time before I found anyone with money who was willing to back such a picture.

"After finishing 'Destination Moon' I began looking around for another story, one that was thrilling with many scenes of a spectacular nature. 'When Worlds Collide' seemed to fill the bill. And although published in 1932 I found that it was still very popular."

"I inquired around and found that Paramount had bought the rights long ago and forgotten about it. So I bought the rights from Paramount and began putting the book into form suitable for a motion picture script. In the meantime, 'Destination Moon' was released and was so successful that the studios imme-

diately began to get interested in pictures of this kind. As a result, Paramount bought back the rights to the book and I went to work for them instead of producing it as an independent."

I said that I had had some misgivings after visiting the "Destination Moon" set. "The picture was such a radical departure from the regulation screen fare that I couldn't help wondering whether the public would accept it or not. But I can't help feeling enthusiastic about 'When Worlds Collide.' I don't see how it can possibly miss."

Pal smiled thoughtfully. "Strange to say, I felt fairly confident that the public would like 'Destination Moon.' I could tell by the way the people on the set reacted to it. You might think that since motion pictures are just a job to them they wouldn't display much interest one way or the other, but on the contrary they behave pretty much the same as a theater audience does. You can learn a good deal by watching your stage crew."

"Do you have anything in mind at present for the future?" I asked.

"Nothing definite," he replied. "My biggest difficulty will be in trying to top 'When Worlds Collide.' Just about everything happens that can happen in that picture. There isn't anything left to do."

I suggested that he might drop the astronomical picture and try an entirely different type, such as time

travel or robots.

Since producers can only hope to stay in business as long as they are able to please the public, perhaps you might help out by sending in about three titles you would enjoy seeing on the screen. Your letter will probably get more attention if it is concise and to the point.

In case anyone is interested here are my three selections listed in order of preference.

1. "The Time Machine," by H. G. Wells.

2. "The Man Who Rocked the Earth," by Arthur Train.

3. "R.U.R." (Rossum's Universal Robots), by Karel Kapek.

My second choice deserves special mention. Arthur Train is known chiefly for his stories in the *Saturday Evening Post* about the lawyers, Tutt and Mr. Tutt. Few know that he also wrote some excellent science fiction in his early days. "The Man Who Rocked the Earth" was written about 1914 in collaboration with the physicist, R. W. Wood. It tells of a man who tried to stop World War I by threatening to change the direction of the Earth's axis in space, which would be a rather timely theme today, too.

"How do you think the public will like 'When Worlds Collide?'" I inquired, as I rose to leave.

Pal smiled and shook his head. "I'd prefer not to make any predictions," he said. "We'll know when it comes out in November."

THE END.

TO EXPLAIN MRS. THOMPSON

BY PHILIP LATHAM

Nothing readily imaginable could more thoroughly and utterly demolish the whole structure of human science than the appearance of so ordinary a sight as a human face—in the wrong place.

Illustrated by Orban

It was a superb plate, one of the best of Andromeda that Kirby had ever seen. The resolution in the spiral arms was amazing. He fancied there was even a hint of approaching resolution in the central nucleus.

"Is this the discovery plate?" he inquired, holding the photograph at arm's length in front of the viewing screen.

"That's right," Rea replied, a disembodied voice from the shadows behind the developing tank. "I got it last dark of the moon. That would be just a month ago on October 1st."

Kirby laid the plate on the illuminated screen taking care to place the emulsion side up. Then he pulled up a chair, let his great bulk down upon it with obvious relief, and be-

gan groping around over the table for a magnifying glass. "Now where's this famous object of yours?" he grunted.

The younger man pointed to a spot on the emulsion with the tip of his lead pencil. "Right here in this little rectangle of stars about a degree south of the nucleus. You'll know it when you see it."

Kirby began moving the glass slowly back and forth over the region indicated. Suddenly he stopped and bent nearer the glass.

"Got it?" said Rea.

Kirby nodded absently. The light from the viewing screen threw deep shadows over his face, accentuating his fleshy features and thick bushy eyebrows. "Well, it certainly looks



real enough," he said, at length. "No question about that. How much exposure did you give this plate?"

"Thirty minutes was all it would stand. The night was rather bright. Aurora probably."

"So I judged," said Kirby, gazing at the plate admiringly. "That Schmidt sure gives beautiful images, doesn't it? Right out to the very edge." He reached for the magnifier. "Now where's the plate you got last night?"

Rea placed another 14 x 14 plate on the screen beside the first. One corner was still damp from the wash. "The seeing wasn't quite so good on this one but I think you'll find the images are nearly comparable. Now take a look at that

same region."

Kirby peered at the object within the rectangle of stars again. Only on this plate the outline extended considerably beyond the rectangle. "Well, it does look different," he admitted. "Bigger, I'd say, with more detailed structure. You've probably got a variable star although you'd think it would have been picked up before, considering how many times this region is photographed. Could even be a nova. The spiral arms extend out a long way, you know." *

Rea bent nearer the screen. His thin sensitive features were in marked contrast to the square jaw and general solid appearance of the older man. "That's one of the

things Slater and I are investigating. He has an idea that by restricting our counts to B stars we'll find new arms that are invisible against the general background."

"Slater, eh?" said Kirby, glancing up quickly. "He's pretty high-powered, isn't he?"

"Oh, he's a lot like most of those theoretical fellows. Never at a loss for an explanation. Seems to know all about almost everything. A second Henry Norris Russell."

"Keep you busy?"

"I'll say. After he left it was like being on a vacation."

Kirby reached for his fur cap and heavy gloves. "Well, I'll see if I can photograph your object at the Cassegrain focus of the 120-inch next run," he said, getting ponderously to his feet. "The scale there ought to show up the structure of this thing whatever it is." He studied it through the glass again. "Sure is funny looking."

"Here, you haven't been looking at it from the right angle," said Rea. He picked up the plate and turned it end-for-end. "Now take a look and tell me if it reminds you of anything."

Kirby scrutinized the object in its new position, his face as grave and serious as before. Suddenly he let out a roar of laughter that shook the dark-room walls. "Why, it's a dead ringer for old lady Katzenjammer in the funny paper! I didn't get it right at first."

"You've got to see it just right,"

said Rea, grinning.

Kirby chuckled softly. "That just goes to show you can find anything in the sky you want. We've already got the Owl Nebula and the Crab Nebula and the Horse's Head. Now I suppose they'll be calling this thing the Katzenjammer effect."

Outside the thermostatically controlled darkroom the air in the dome felt damp and chill. Overhead the white tube of the Big Schmidt loomed like a dim ghost in the faint evening light filtering in around the shutter.

They walked down to the clump of oaks below the dome where Kirby had left his car. The sun had set a few minutes before leaving a long crimson streak along the coastline. In the east the twilight bow was rising over the mountains like an advancing thunderstorm.

"Seeing must be awful from the way those stars are jumping," said Kirby, glancing at the faint outline of the cross of Cygnus beginning to sparkle in the zenith. "You'd better forget about observing tonight. Take my advice and curl up by the stove with a good detective story."

Rea looked thoughtfully at the fading streak of red along the coast. "I've been seeing things in the sky ever since I was a kid. You know hardly any of the constellations look like the people and animals they're supposed to represent. Yet I've never had any trouble seeing them. The Lion and Medusa and the Dragon are just as clear to me as if someone had marked them out

on the sky." He thrust his hands deeper into the pockets of his sheep-lined coat. "Depends on your personality, I guess. Like those ink-blot tests."

Kirby snorted. "If you ask me, it would be a good idea if we got rid of all that junk in the sky. Why, lots of people think that's about all there is to astronomy. They don't think you know anything unless you can point out the Bull or tell 'em which star marks the hind end of the giraffe. Me—I don't know *Lepus* from *Puppis*."

He slammed the door of his car and kicked the starter. "Well, see you next week. We'll take a crack at old lady Katzenjammer."

He waved good-by and sent his car grinding down the road toward the gate to the observatory grounds. Rea stood watching him until the car disappeared around the old pine tree. Then he turned and started slowly plodding up the trail to his cabin.

The sound of the dome rumbling to a halt was followed by the thin high-pitched whine of the motor turning the telescope in declination. The massive framework that formed the tube of the 120-inch reflector continued to turn until it was directed to a hazy patch of light barely visible in the constellation of Andromeda. The whining of the motor stopped, there was a series of sharp reports like the crack of a rifle, and then silence.

"Well, that oughta be it," the man

at the control desk said, glancing at the illuminated dial of the sidereal clock in front of him. "Right on the nose."

There was no reply from the two men huddled together on the little platform at the Cassegrain focus fifty feet above him. One of the men was peering into the focal plane of the mirror, an oblong section of the heavens brought down to earth for mortal men to explore.

"Find it?" said Rea, from his precarious perch on the rear of the platform.

Kirby moved his head from side to side viewing different portions of the star field. "Yeah, I got Andromeda all right. But we don't seem to be centered on the object quite." He punched one of the buttons on the panel by his elbow. "There—she's coming in now." He released the button and turned back to the starfield. "Want to take a look?" he inquired casually, turning to Rea.

They shifted positions on the platform. Rea settled himself in the observing chair, took the eyepiece from Kirby, and began scanning the focal plane. He stopped and bent nearer the focal plane with a sharp intake of breath. Neither man spoke. The night assistant at the desk yawned and began turning through the pages of an old Sears Roebuck catalogue.

"Got another eyepiece?" said Rea, in a toneless voice.

"Try this one," said Kirby, groping in his pocket. "It's a little lower power."

Rea took the eyepiece and moved it over the focal plane again. After a brief inspection he leaned back and sat looking down at his feet in the direction of the mirror. Suddenly he swayed slightly and grabbed at the side of the platform. Kirby's arm was around him in an instant.

"Hang on!" he said. "I felt the same way the first time I saw it, too."

Rea sat for a few moments holding hard to the edge of the platform. Presently his grip relaxed. "Thanks for grabbing me. It's a long way to the floor."

"I know," said Kirby, "I fell off once." He moved back a little farther. "Should have warned you probably, but I wanted to see if it hit you the same way that it did me. Guess there's not much doubt about it now."

"No, I guess not," Rea said thoughtfully. "Kirby, it is a face in the sky! Up there among the stars just as if it were projected on the sky with a magic lantern."

"Huh, you don't need to tell me. I've been photographing it for three nights running now. I know every line in that face."

Rea gave him a startled look. "And you've never told anyone!"

"Well, I didn't want to go off half-cocked till I was sure what I was doing, did I? So I took some exposures here and a bunch more at the 60-inch. Red and blue sensitive both out of an emulsion we just received. Broke the seal myself.

And they all show the same identical thing—a plump middle-aged woman with a hair-do like Mrs. Katzenjammer's in the middle of the Andromeda Nebula." He took a can of tobacco from his pocket and began tamping down the bowl with deliberate care.

Rea half turned in his chair. "But man alive, it's insane! Crazy! Look here, nobody could be trying to pull something on us, could they? Trying to trick us?"

"Who, for instance?"

"Oh, I don't know. Anybody. The night assistant down there at the desk."

"You mean old Hank? No. He hasn't had a new idea in the last twenty years."

Kirby puffed reflectively on his pipe. "No, in my opinion the face is real in the sense that it's not an optical illusion or an instrumental effect. I'm thoroughly satisfied on that score. What it really is I haven't any idea. That's what we've got to find out."

"What are you going to do?"

Kirby clenched the stem of his pipe more firmly. "I'm going to take some more exposures. If you'll hand me that plateholder over there—"

The face that had been only faintly visible at the telescope stood out with startling clarity when the plates were developed downstairs in the darkroom.

"One thing's sure," said Kirby, holding a plate up to the light. "This

face is outside our own galactic system. You can see foreground stars superimposed all over it. In fact, from the way the spiral arms and some of this obscuring matter crosses the left eye and the bridge of the nose, I'd say it was a little farther than Andromeda itself."

He replaced the plate in the wash and began drying his hands on a towel. Rea lifted a plate from the wash with the tip of his finger. "Mind if I look at this one? I think it's a longer exposure."

"Sure, go ahead."

Rea rinsed the plate under the faucet, wiped the emulsion with a piece of cotton, and placed the dripping piece of glass on the viewing screen. "Say, you can see a lot more on this one," he called out excitedly. "Her neck and arms and part of her dress shows up. Looks like the same kind of clothes the women are wearing now."

Kirby came over beside him. "By gosh, you're right," he said. "The latest thing."

"But that makes it worse," Rea protested. "If she's at about the same distance as Andromeda, the light must have left her nearly a million years ago. She ought to have on a tiger skin or rhinoceros hide."

Kirby emptied the ashes from his pipe into the tin can thoughtfully placed in the darkroom by the janitor. "Well, Dr. Rea, you're the one who discovered this Katzenjammer effect. So what should we do about it? Send an announcement telegram to Harvard? Summon the

press? Proclaim it to the world?"

"No, not yet anyhow," said Rea frowning. "Let's wait. Keep it to ourselves for a while. Of course, if it keeps on getting brighter the news is bound to come out pretty soon. Some amateur or comet hunter is sure to spot it."

"And then what?"

"And then by that time Slater will be here and he's sure to have some explanation. I think he's been working on some new theory about the universe. How it got here and where it's going."

Kirby studied the face on the plate with a critical eye. "If we've *got* to have a woman in the sky, why does she have to be fat and middle-aged? Why couldn't she be a good-looker—like that dame on the calendar there?"

The thing that always surprised people about Slater the first time they met him was his astonishing youth. It seemed impossible that anyone so young could know so much. After a while you got used to the idea but right at first it kind of threw you. Before long you got in the habit of deferring to him and letting him take the lead and make the decisions. Not that he ever insisted upon his own ideas or belittled the opinions of others. Far from it. But there was a certain serene confidence about everything he did that made him a natural leader.

Now he looked a trifle puzzled at the two men who entered his office

with solemn mien.

"Well, gentlemen, come in, come in. This is a long anticipated pleasure. Ah, I see you brought the plates with you. Good. I am eager for work. Good solid substantial work." He straddled the back of his chair with his long legs and sat gazing expectantly at his visitors.

"How're things back at Princeton?" Rea asked, laying the box of plates on the desk. "I hear you've been giving a course on cosmology at the Institute for Advanced Research."

Slater laughed. "I'd hardly call it by such a dignified name as a 'course.' It's all so delightfully informal, you know. One day we have the universe all settled. The next day we have to do it over again." He shrugged indifferently. "Oh, I discussed Jordan's cosmology a little. Sometimes I think he really has something. Then again I wonder if it's anything but numerology."

He was thoughtful for a moment then became all animation again. "But I'm bursting with curiosity. What luck did you have with that new fine-grain emulsion? Did you try it on the Coma or Virgo cluster? And how about N.G.C. 185? I'm sure you have something wonderful to show me."

Kirby selected a plate from the box and laid it on the viewing screen imbedded in the top of the desk. Without the lights on underneath the photograph was simply a dark square upon the white opal glass. "I've been working with Rea on

your program," he explained. "We've got some interesting results all right only they're not exactly what we expected."

"But that's fine," Slater cried. "An unexpected result is a rare treat."

"Yeah," said Kirby, "only this time it was a little more unexpected than usual."

"We might as well be honest and tell him it's plain crazy," Rea broke in. "It doesn't make sense. It's something that shouldn't be in the sky at all."

Slater looked at them bewildered.

"What Rea is trying to say," said Kirby slowly, choosing his words with care, "is that he's found a woman's face in the sky. Get it—a woman's face. Right smack in the middle of the Andromeda Nebula."

"But surely you're joking," Slater exclaimed. He glanced quickly from one to the other as if hoping to catch them in a secret exchange of information.

"You can see for yourself," Kirby told him, switching on the illumination. "I'll swear that's just the way it showed up in the developer."

Slater seized a magnifying glass and bent over the plate. He studied the face staring up at him from the emulsion for several seconds, then straightened up slowly.

"This is some ghastly joke," he declared angrily. "Some horrible ghastly joke. Someone with a perverted sense of humor—"

Rea seized him by the arm. "I told you it was crazy, didn't I? I

told you there wasn't any sense to it. But all the same there it is!"

Slater gave Rea a long searching look. Then he bent over the plate and began examining it again, not only the face but the star images for several degrees around it. When he finally laid the glass aside his eyes were fairly glowing. "But this is wonderful—simply wonderful," he whispered. He wrapped his arms around his shoulders hugging himself with delight. "Now tell me all about it!" he commanded. "Instantly!"

They gave him a hasty resumé of events up to date. When they had finished he began pacing up and down the narrow confines of his office, his brow furrowed in thought.

"First, how many people know about this face?" he asked.

"So far," said Kirby, "just us girls. But you understand we can't keep it quiet forever. We can't put a sign on it telling the world to keep off, you know."

"That's the unfortunate part, I'm afraid. If we could only keep it as our private property; or at least confine it within the realm of scientific thought." He fell to studying the image on the plate again. "Curious looking female, isn't she? Face seems vaguely familiar somehow."

"Rea thinks she looks like Mrs. Katzenjammer," said Kirby.

"No-o-o," said Slater judiciously, "I should say she more nearly resembles that woman in the Moon

Mullins strip. The one who's always swatting Uncle Willie over the head."

"Why does she have to be so commonplace looking?" Rea complained. "A woman's face among the stars should be lovely, ethereal, something to dream about."

Slater clapped him on the shoulder. "That's life for you, old man. It's so seldom we ever attain that complete perfection in our environment that corresponds to ideal beauty. There is always the jarring note. The annoying intrusion. We are watching a sunset and an airplane starts spelling the name of somebody's soup on the sky. In the middle of Beethoven's Ninth Symphony somebody sneezes. It is a world of sweets and sour."

He began pacing the room again. "But here we are philosophizing when we should be hard at work. There are things to do. Questions to which we must find the answer while we still may work in peace—before this ghastly celestial apparition bursts upon the world."

He swung on Kirby. "I'm curious to know what keeps this woman shining. Why is she visible? What is her source of illumination? Can you give me a spectrum of her?"

"I don't see why not," Kirby replied. "In fact, she ought to be a fairly easy object compared with some I've tried for."

"How soon?"

"Well, let's see. The two-prism nebular spectrograph is on at the Cassegrain now. If I can focus it

this afternoon, I might be able to get a plate tonight."

"What region of the spectrum would that cover?"

"From H and K to about H Beta. To get the visual I'd have to change spectrographs."

"I'm sure that won't be necessary. The photographic region should be sufficient for our purposes."

He turned to Rea. "Do you have some good directs of the face taken several months apart? Plates taken at a small zenith distance suitable for precise measurement?"

"Yes, I think so."

"I want to measure the position of the face relative to the surrounding stars for aberration. While all modern theories agree that the velocity of light is independent of the velocity of the emitting source, it seems like a longshot well worth taking, considering the slight effort involved. How soon can you get me those plates?"

"They're downstairs in my office now."

"Splendid. I'd also like to do some photometry on the face. See how fast she's increasing in brightness. Are your plates calibrated by any chance?"

"We always calibrate them. It's routine."

"Good. Good. Then we can start measuring at once."

Kirby started for the door. "Well, guess I'd better be getting up on the mountain if I'm going to get that spectrograph focused." He nodded to Slater. "It's nice to have

seen you again. I'll let you know as soon as I get anything."

"Please do. Naturally I needn't impress upon you the importance of this discovery. It's going to revolutionize all our thinking. Crystallize a lot of thought that heretofore has been mere conjecture."

Rea waited until Kirby was down the stairs. "Slater, how do you explain an effect of this kind? It's beginning to get me down."

"How do I explain it?" Slater asked. "Oh, I don't know. There are probably a dozen ways of accounting for it. As a matter of fact, I think it might be made to fit in rather nicely with some of the cosmological theories that are being advanced by members of the Cambridge group. Have you read that recent paper of theirs in the *Monthly Notices* on 'The Physics of Creation'?"

Rea shook his head.

"Tremendously stimulating paper. All wrong in my opinion but tremendously stimulating just the same." He laughed gaily. "But now let us get to work. I fear that framing theories is going to be the least of our worries in the future."

Kirby came directly to headquarters as soon as he got down off the mountain. He was still wearing his fur cap and heavy boots when he came tramping into Slater's office.

"Well, here you are," the astronomer said, taking an envelope from his pocket and extracting a glass plate from it about the size of a

calling card. Across the center a thin black streak could be discerned about an inch long. "I got several others but this is the best of the lot."

Slater regarded it with intense interest. "Have you had a chance to measure it yet? What did you find?"

"Sure, I've had a chance to measure it. If there'd been anything there to measure."

"What do you mean?"

"Take a look and see. Here—use my glass. You'll need a pretty high power to show it up."

Slater held the plate with the lens almost touching the glass. Through the eyepiece he saw a smooth unbroken dark streak with tiny black lines sticking out on either side of it. After a brief inspection he laid the plate down and gazed blankly at Kirby.

"A continuous spectrum," he said, unable to keep the disappointment out of his voice. "Not a trace of a line. Not even H and K or the G band."

"Just a blank," Kirby said, lighting his pipe. "As if I'd taken a spectrum of that electric light filament over there. We can't tell what she's made out of or whether she's coming or going."

"By the way, where did you set the slit of the spectrograph?"

"Right on the end of her nose. That looked like the brightest place on her face so that was where I set it." He chuckled to himself. "Must be the first time an astronomer's



ever got the spectrum of a woman's nose."

Slater opened a thermos bottle and poured himself a cup of coffee. "Our researches at this end have been singularly unfruitful too. Preliminary measures on the aberrational constant give practically identical values for both stars and face." He indicated a chart upon which he had been working when Kirby came in. "The most interesting result is our photographic photometry on the relative intensity of the features. She's brightening up at an amazing rate, roughly as the fourth power of the time as nearly as we can tell. Rea's measuring on a plate now."

The telephone rang as he was about to place another point upon the curve. He reached for the instrument with one hand, holding the cup of coffee with the other. "Yes," he said, "Slater speaking."

"Say, I'm calling from the *Times*," the voice at the other end said. "We've got a story here from an amateur astronomer down at Oceanside. He's got some kind of a telescope he says he made himself. Well, he claims he's been seeing a face in the sky for the last couple of nights. Found it by accident while he was showing his friends the Andromeda Nebula." The reporter continued almost apologetically. "There's been so many crazy reports like this coming in lately we haven't paid much attention to them but this fellow sounds fairly sensible. As

a cosmologist, would you have any comment to make, Dr. Slater?"

Slater took a sip of the coffee. "What kind of a face was it?"

"He says it's a woman's face."

"Well, that's a relief from the flying saucers, anyhow. They were beginning to get awfully tiresome I thought."

"Yeah, the country's full of nuts. Well, Dr. Slater, I just thought you might have some explanation to offer—" He broke off abruptly. A moment later he was back again an excited note in his voice. "Say, we just got a flash on the teletype. From an astronomer at the Helwan Observatory in Europe. Ever hear of it?"

"Yes, I've heard of it."

"Well, they claim they've spotted something, too. Only they don't call it a woman's face. They just say it's a 'remarkable object.'"

"Conservative, eh? Well, that's very interesting indeed. I'll try to remember to take a look at Andromeda tonight."

"Listen, Dr. Slater, you're one of the most eminent cosmologists in the country. Are you sure you don't have some explanation about this thing?"

"Quite sure!" said Slater emphatically. He hung up.

Kirby regarded him quizzically. "Newspaper man, huh?"

Slater nodded. "It was bound to come out eventually. We might as well face it now as later. No pun intended either."

He was pouring himself another

cup of coffee when Rea came in the door waving a telegram. "Well, the whole thing's out. A half a dozen reports have come in to Harvard already."

He slapped the telegram down on the desk disgustedly. "If it'd been anywhere else but Andromeda, we could have kept it under cover indefinitely. But those amateurs are always testing their telescopes on it. When people get their first look at that face tonight all hell's going to break loose."

"Did you say tonight?" Kirby demanded.

"I certainly did," Rea said. He reached across the desk and placed a point on the sheet of graph paper. "There. That's the result of my last measure. The curve is fairly easy to extrapolate. You can see where she'll be tonight—almost as bright as the full moon."

Kirby groaned. "I'm getting out of town."

"Do you know what this means?" Rea said. "It means everybody is going to be after us for an explanation. And it had better be a good one, too."

The telephone rang. Nobody moved. It continued to ring, a steady insistent jingle. Slowly Slater leaned across the desk and lifted the instrument.

"Get any sleep last night?"

Slater laid aside the newspaper he had been reading when Rea came in. "Not much," he admitted, smiling wearily. "People kept calling up all evening. When I took the tele-

phone off the hook they started pounding on the door. Sounded as if there was a whole regiment on the front lawn. While my landlady was getting the police I made a quick exit out the back way. Spent the rest of the night in a moving picture theater." He reached for a cigarette. "An all western program. I wouldn't recommend it."

"The worst part," Rea complained, "is that because we're astronomers people seem to think we're responsible for what goes on in the sky. You'd think they'd have better sense."

Slater gave him an indulgent smile. "By the way, how did the face look last night? There's too much light in my neighborhood to see."

"You're lucky," Rea told him. "People were standing on all the streets as if they were hypnotized. Just standing there by the hour gazing at it. Waiting for it to do something. That's the worst part about it. The thing wouldn't be so bad if there was any life in it. If it wouldn't keep looking out at you with that fatuous placid expression." He shuddered.

Slater sighed and returned to the newspaper. "I see they're predicting the end of the world now. It's scheduled to hit here Monday at nine in the evening."

"Who says so?"

Slater scanned the type under the big black headlines. "It doesn't say definitely. Just a rumor, I guess."

"You don't think there could be anything to it then?"

"I'm reserving opinion until I get a report from Kirby. He was going to try to photograph Andromeda again last night. When I hear from him we may have something definite to go on. What's that?" he said, glancing toward the door. "Sounds as if we had company coming."

Rea poked his head around the side of the door. "We're in for it now. There's a whole delegation headed this way."

"Relax," said Slater, lighting a cigarette. "To tell the truth I'm really enjoying all this immensely. If the world's coming to an end, we might as well get all the fun out of it we can."

The little man at the head of the procession reminded you of a badly bedraggled rooster. He had a thin scrawny neck with a prominent Adam's apple that jerked up and down with a convulsive motion. His watery blue eyes had a bewildered expression above his long walrus mustache. He stood in the doorway regarding the two men uncertainly.

"Which one of you gentlemen is Dr. Slater, the noted cosmologist?" he demanded.

Slater bowed slightly. "That happens to be my name. What can I do for you?"

"Well, sir, my name is Thompson," the little man replied. "Homer P. Thompson from Indianapolis." He paused as if to allow time for this to sink in.

"How do you do?" said Slater,

smiling cordially.

"I work at Fosberg's Department Store on East Center Street," Thompson continued. "Been janitor there twenty years. They's mighty few got a record good as mine if I do say it. You can ask Mr. Fosberg himself. He'll vouch for me. He'll tell you every word I'm saying is the truth."

"I'm quite sure that won't be necessary, Mr. Thompson," said Slater. "I can usually tell a man of integrity when I see one." He flicked the ash from his cigarette with the tip of his finger. "Now what was it you wished to see me about?"

"It's about my wife Hariette, Dr. Slater. She—" Tears suddenly welled up in his eyes and his Adam's apple twitched violently. He leaned against the door his whole body racked with great choking sobs.

"Here, here, sit down, Mr. Thompson. Compose yourself," said Slater, hastily shoving a chair in his direction.

A young man who acted as, if Thompson were his personal responsibility assisted the trembling man to the chair. He handed Slater a card. "Davenport. I'm with *World Press*. I don't know why they always hand these jobs to me."

Somebody in the back of the crowd produced a bottle of whisky. "Here," said Davenport, unscrewing the top, "take a drink of this."

Thompson raised the bottle to his lips and took several deep gulps. He lowered the bottle, gasped

slightly, and wiped his mustache with the back of his hand. "Thanks," he said, passing the bottle back. "That was good whisky."

"Now, Mr. Thompson," Davenport said, in a soothing voice, "tell Dr. Slater your story just the way you told it to us in Indianapolis."

Thompson drew a long breath. "Well, it was about six weeks ago today that my wife was taken by this attack," he began. "We was comin' home from the Westside Bridge and Bingo Club. I never wanted to go in the first place. I told Hariette my feet hurt me and we'd never won a cent anyhow. Seems to me I've always just been losin' out all my life. My whole family's worked hard as far back as I can remember but none of us never seemed to get very far. I got a brother in Nebraska that's a deputy sheriff and got his picture in the paper once but that's as far as any of us ever got."

He steadied himself against the side of the desk.

"Well, we hadn't any more than got home and got up the stairs when it hit her. She clutched at her heart and gave a groan and down she went. I ran over and did all I could but it wasn't no use. She was dead before I got there."

Slater nodded sympathetically.

"She was buried in Laurel Haven in the plot we'd picked out a long time ago, ever since that smart young fellow came to the door and talked to my wife into makin' a down payment on that Before Sor-

row Comes plan. The Reverend Tilsbury said some words over her the way she always had wanted him to, and when I saw her layin' there in the casket with her rose silk dress on and the coral necklace she wore the day we was married, I naturally supposed that'd be the last time I'd ever look upon her face."

He began shaking all over as if agitated by some deep inner emotion. Several times he struggled to get the words out but failed. Then they burst forth like water from a dam.

"And now I see her every night up there in the sky!" he cried. The whole neighborhood's waitin' for her to rise over the garage. When you first see her she's upside down as if she was standin' on her head. By midnight she's up over the top of the Elmwood Apartments. Then she sets right side up over the drug-store. It wouldn't be so bad if she'd only recognize me; if she'd just smile or laugh or somethin'." He buried his face in his hands.

Slater bent down beside him. "Listen, are you sure that's your wife in the sky? Absolutely sure?"

"Why, certainly I'm sure," Thompson declared indignantly. "Take a look at these." He spread half a dozen snapshots out on the desk. "Here's one of Hariette the way she looked last Fourth of July when her folks was over for dinner. Took it out in the backyard myself. And here she is at her daughter's place over in Kokomo."

Slater examined the photographs incredulously. The resemblance between the woman in the pictures and the face in the sky was unmistakable.

Thompson gazed up at the scientist, with pleading eyes. "They tell me you can explain these things. Dr. Slater. That you know all about what goes on up there. Then tell me—where is she, Dr. Slater? *Where is she?*"

For once Slater's poise seemed on the point of deserting him. "Well, that's awfully hard to say," he replied, running his fingers over the back of his neck. "After all, I'm not omnipotent, you know."

"Is it heaven, Dr. Slater? Or . . . or maybe the other place?"

Slater gave him a reassuring pat on the shoulder. "Maybe there's no difference. Maybe they're both the same. The world's a mad topsyturvy place right now, I'm afraid. But wherever your wife is, Mr. Thompson, I'm sure she's happy."

Several reporters darted off down the hall. A flash bulb popped and then another and another. "One more, Dr. Slater," Davenport yelled. "Looking over his shoulder at the photographs."

In the midst of all the confusion the telephone rang.

"Get that for me will you, Rea?" Slater shouted. "It's probably Kirby calling from the mountain. He's the only one allowed to call in."

Rea picked up the instrument. "Hello, Kirby?" He waved down the crowd at the door. "Confound

it, I can't hear a thing! All right now, go ahead."

He sat with the receiver at his ear taking down the message without comment. Gradually the room quieted down, as if everyone there sensed that something important was transpiring. When Rea put the telephone down his face was very grim.

"Well, Kirby said he got Andromeda last night. The seeing wasn't very good but he said he got it anyhow. Enough to see what's going on, at any rate."

"Good old Kirby," Slater murmured.

Rea tried to make his voice sound casual. "He says the nebula's breaking up. Tidal strain evidently. The side toward the face is scarcely recognizable now. Nothing but a hazy mass of star stuff with dark clouds of obscuring matter streaked across it. And novae in the spiral arms. But he says the face itself seems to be getting dimmer, as if it were fading away."

The room had become very still. All eyes were turned on Slater. Davenport leaned toward him across the desk.

"You've got to tell us, Dr. Slater," he said in a hoarse voice. "What does it mean? Surely there must be an explanation."

Slater raised his arms and let them fall to his sides again in a helpless gesture. Thompson kept shuffling the photographs of his wife back and forth between his fingers.

"My old woman," he muttered dazedly, "up there in the sky."

The Milky Way was a glowing arch spanning the heavens like the gateway to infinity. Below along the coastline the lights of a score of towns sparkled in the evening breeze. Slater drew back the sleeve of his coat revealing the illuminated dial of his wrist watch.

"Nine o'clock," he announced. "Time for the end of the world." He glanced over the peaceful landscape. "Well, everything seems to be intact so far. No signs of coming loose at the seams yet."

He shifted his gaze to the northeast where the Andromeda Nebula was a dim spot of light with the features of a human face barely visible in the background.

"Hm-m-m. Mrs. Thompson is barely fifth magnitude tonight," he observed. "In another week she'll have faded from sight entirely. Gone but not forgotten."

Rea shifted his position against the iron railing upon which he was leaning. "You said once there were a dozen ways of explaining a face in the sky. So far I haven't heard a single one."

"Of course I was exaggerating," said Slater. "Three or four would have been more like it."

"The chief difficulty I should say in framing a suitable theory is that great masses of matter like Andromeda don't seem to fit into the universe in the first place. There they are dotted all over the sky except

where they're blocked out along the Milky Way. Long ago Sir James Jeans remarked that the external galaxies seem like singular points where matter is being poured into our universe from some entirely extraneous spatial dimension. More recently Gold and Bondi have shown that if our laws of physics are to retain any meaning then we are forced to the conclusion that matter is being created continually in space, at the rate of one hydrogen atom per cubic meter every three hundred thousand years. Not enough to make us feel cramped very soon. They call it the 'perfect cosmological principle.' Naturally they don't mean that matter is really being created. What they mean is that matter is somehow being intruded into our space from outside."

He waved his hand in the general direction of Andromeda. "In local regions of space it may be possible for matter to be created at a much faster rate. In Mrs. Thompson's case something must have got badly out of control. There was rage in heaven—a celestial crack-up—and we got a glimpse of a sight we were never intended to see. It was as simple as that."

"But that fat face in the sky!" Rea cried impatiently. "Don't tell me seriously that you ever expect to fit that into any rational theory."

"I often wonder if theoretical physics can ever really explain anything," said Slater soberly. "In the last analysis, I wonder if theoretical physics can ever do more than

merely describe?"

He stood for a minute looking moodily down at the lights of the towns along the coastline. When he spoke again it was in a different voice from the bantering tone he usually employed.

"People are forever asking for explanations. Nice pretty explanations in a world where the good die young, where the wicked go

unpunished, and there are wars when nobody wants war. If we can find no explanation for life on earth in the microcosmic scale, then why expect to find one in worlds beyond in the macrocosm?"

He laughed bitterly. "I can spin endless theories for you that describe but when you ask me for one that *explains*—that is another matter entirely."

THE END

IN TIMES TO COME

Our interest in science-fiction is somewhat more than that of pure entertainment value; most of us, I believe, genuinely feel that it is of high importance that human beings learn to think in terms of a technical age. Once, business executives were almost uniformly lawyers, or men educated in a general Liberal Arts course. Today, a high percentage of executives are technicians—because only a technically educated man can correctly interpret the world of today.

People in general, however, have not yet accepted that this is not the *end* of technical advance, but the *beginning*. The importance of science-fiction, aside from its purely entertainment value, lies in its influence in orienting people to appreciate that fact. "Technology exists; technology will change. All right, but so what? What does it mean to me? I'm no engineer."

The increasing acceptance of science-fiction is simply the direct result of an increasing acceptance of the fact that technology will affect us, our lives, our security, without our individual choice, unless we choose to learn enough about it to choose.

The recent increase in science-fiction movies stems from that, and, by its existence, reinforces that increasing acceptance of the future of technology. I feel that the fullest co-operation between the science-fictioners and the science-fiction movies, is of real benefit to both sides—and the general public. Astounding SCIENCE FICTION is, therefore, co-operating to the fullest with Paramount in promoting "When Worlds Collide." You'll see that co-operation at the theaters, and in this magazine. The technological age has now reached a point where we can't live without it—and we can't live with it, if only a few of us understand what it means.

The Editor.



THE REFERENCE LIBRARY

BY P. SCHUYLER MILLER

PRELUDE TO SPACE

It seems certain that the technical papers are now beginning to appear, and the books are being written, which will serve as handbooks for the first human conquest of space. Two little books, and one very fat one, have appeared during the last few months which for the general reader supply what Arthur C. Clarke, in his excellent little paperback "book," has called the "Prelude to Space."

The fat book, needless to say, is the new third edition of Willy Ley's

"Rockets, Missiles, and Space Travel" (Viking Press, \$5.95). Like the other books mentioned here, it will have a separate, full-scale review in the near future. Suffice it to say that the new edition would seem to be a required reference for anyone concerned with science-fiction or the pragmatic side of rocketry. It is rewritten, even in the historical sections which make up nearly two-thirds of the book. It has new illustrations, new data in the fattening appendix, and completely new chapters to cover the wartime rocket work in this coun-

try and elsewhere. It has now reached a volume of four hundred thirty-six pages and includes a folding chart prepared by the Douglas Aircraft Company, showing our knowledge of the Earth's atmosphere as of 1949. No reader of this magazine needs to be assured of the quality of Willy Ley's writing, and his ability to make seemingly dry or difficult subjects lucid and just plain good reading.

There is no other book which covers the historical development of rockets and rocketry as Willy Ley does. Arthur C. Clarke, who doubles as assistant secretary of the British Interplanetary Society and an excellent writer of science-fiction, has done a very good job of covering the how and why of rockets, space flight, and what he calls the "subsidiary problems" connected with them in a book which slips nicely into your coat-pocket, "Interplanetary Flight," subtitled "An Introduction to Astronautics" (Harper, \$2.50). This is certainly recommended to anyone not yet clear on the foundations of space flight; and is a handy thing to have around even if you are a veteran at such things, if only to hand to the week-end guest who won't believe it can happen.

The third of our triad—still in proofs at the time this is written, but scheduled for publication August 20th—is "Space Medicine" (University of Illinois; paper, \$2.00; cloth, \$3.00). This expands upon Clarke's "subsidiary problems" of

the human factor in flights beyond the earth. It consists of six short papers by specialists, presented in a symposium on these problems held in March 1950 at the Chicago Professional Colleges of the University of Illinois. This symposium is apparently the second of a series held under the auspices of the Department of Space Medicine of the United States Air Force School of Aviation Medicine at Randolph Field, Texas, and three of the papers are by staff-members of that department.

After a brief historical introduction by Major General Harry G. Armstrong, Surgeon General of the USAF, the basics of the Ley and Clarke books are condensed still further by Wernher von Braun, apprentice in Ley's "*Verein für Raumschiffahrt*," head of the Nazi rocket work during the war, and now consultant to our own military forces. The possibility of life on other planets and in particular Mars is covered by Hubertus Strughold of the Department of Space Medicine, and a chapter on "Astronomy and Space Medicine," by Heinz Haber of that department deals chiefly with sources of hard radiations in space, which may affect human beings.

Only the last two chapters deal strictly with "space medicine." Colonel Paul A. Campbell writes on "Orientation in Space," covering the basic problems of extended free-fall, while Konrad Buettner of the Department of Space Medicine deals

with the "bioclimatology"—the conditions within the microcosm of a manned space rocket.

If these symposia continue, it can be hoped that this modest eighty-three page book will one day be expanded into a definitive manual which will live up to its name. That such questions as the effects of extreme acceleration or of anoxia are passed over may be due to their having been taken up at the previous symposium, or to their involving classified information. Meanwhile both readers and writers of science-fiction will find a number of new ideas and bits of information in the book, which should duly find their way into future stories.

Finally, for an overview of the universe which the prospect of space flight is opening to us, the young British astronomer, Fred Hoyle, has collected his BBC lectures and *Harper's Magazine* articles between covers in "The Nature of the Universe" (Harper, \$2.50), opening to the casual reader some of the newest hypotheses on the nature and origin of the stars, planets, and galaxies, and raising the concept of continuous creation. You will have a full discussion of this, as of the other books, here soon.

SEETEE SHIP, by Will Stewart.
Gnome Press, New York. 1951. 255 pp. \$2.75.

In the July 1942 issue of Astounding SCIENCE FICTION

Jack Williamson, using the pen name "Will Stewart," introduced the concept of "seetee"—contraterrene matter—to science fiction in the novelette "Collision Orbit." Seetee, as is now pretty generally known, is matter electrically opposite to normal or terrene matter, with a nucleus of neutrons and negative protons surrounded by shells of positrons. In contact with normal matter, the opposites are attracted to each other, react, and neutralize each other with total conversion of their mass to energy.

Williamson suggested that a wandering planet from a seetee world had at some time in the past entered the solar system and collided with a fifth solar planet between Mars and Jupiter. The explosion created the asteroids, but also left fragments of the alien invader—the "seetee drift"—as a deadly hazard to space navigation and a tantalizing source of untouched power. In "Collision Orbit" and its sequels, "Minus Sign" (November 1942) and the two-part serial, "Opposites React" (January-February 1943), he developed the story of the efforts of Drake and McGee, planetary engineers, to tame and harness seetee and use it for the emancipation of the people of the asteroid belt.

These three stories—principally the last two—have now been rewritten—perhaps inter-written is the better term—to create a single unified novel with Rick Drake, son of old Jim Drake, as its hero and the discovery and exploration of the

mysterious contraterrene ship from "Opposites React" as the central theme. Nostalgic memory very nearly produced the verdict that the original stories were better; then a pricking conscience took me to the attic, and the verdict is respectfully reversed. "Will Stewart" has done an excellent job of unification, producing a book which to my taste is well ahead of last year's "Seetee Shock" (Simon & Schuster, \$2.50). As with van Vogt's "Weapon Shop" books—which originally appeared here at the same time as the seetee stories—the sequence is reversed—"Seetee Ship" tells the story of the establishment of the Drake-McGee base, Freedonia, and the discovery of a bedplate, while "Seetee Shock" follows several years later with the effects of that discovery on human society.

"Seetee Ship," incidentally, is typographically a much better book than the S&S volume. The fantasy publishers with lower overhead and probably a smaller margin of profit, are doing a consistently better job in this respect than the big general publishers who take on science-fiction as a sideline.

SEVEN SCIENCE FICTION NOVELS OF H. G. WELLS. Dover Publications, New York. 1950. 1015 pp. \$3.95.

Those of us who contributed to August Derleth's request for a definitive science fiction bookshelf a

few years ago were quick to include the then-available Knopf collection of Wells novels. Dover has now brought these seven books back into print in a brand new edition which is, of course, one of the bargains of the year.

The novels included are "The Time Machine," "The Island of Dr. Moreau," "The Invisible Man," "The War of the Worlds," "The First Men in the Moon," "The Food of the Gods," and "In the Days of the Comet." Only the last of these rates below par by present standards: when the Dover edition was announced, I had hoped that "When the Sleeper Wakes," "The World Set Free," or one of the other less available Wells novels might be included.

A new jacket by Michael Chanwick, in a "Days to Come" mood, and new typography throughout—the Knopf edition foreran "Forever Amber" by using a double-column page—makes the book very attractive. While it remains in print it will be a "must" for anyone who does not have the 1934 collection—which, by the way, included an introduction by Wells himself.

ROGUE QUEEN, by L. Sprague de Camp. Doubleday & Company, New York. 1951. 222 pp. \$2.75.

Sprague de Camp's own "future history" of the worlds opened to mankind by Viagens Interplanetarias has paid its most handsome

dividend in this brand new novel, which explains with dead-pan humor how love came to a neuter female of the beelike Avtini, humanoid inhabitants of the planet Ormazd.

The Avtini, like most of the civilized races of Ormazd, have in the distant past adopted an organization of "functional female" brood-queens, neuter female workers and warriors, and "functional male" drones who are slaughtered after their duties are over or their personalities have grown boring to the reigning monarch. The heroine of the story, Iroedh—consult the four-page glossary and foreword on Ormazdian pronunciation for further details—is a thorough nonconformist so far as the rest of the social routine is concerned, but her troubles do not really begin until she makes use of a Terran expedition to rescue a condemned drone, overthrow her queen, and bring about other forms of riot and near-riot among the quietly bloody folk of Ormazd.

This is by long odds the best of the Viagens stories, worked out with the de Campian flair for meticulously ridiculous logic. The scientific principle behind the Avtinian society is in a sense a mystery, and will not be revealed here. But what a Broadway musical this would make—with Mae West in a slightly fattened part as a queen! Alas, we have our inhibitions, just as the Avtini have. But I assure you, it's all perfectly clean.

BEYOND INFINITY, by Robert Spencer Carr. Fantasy Press, Reading. 1951. 236 pp. \$2.75.

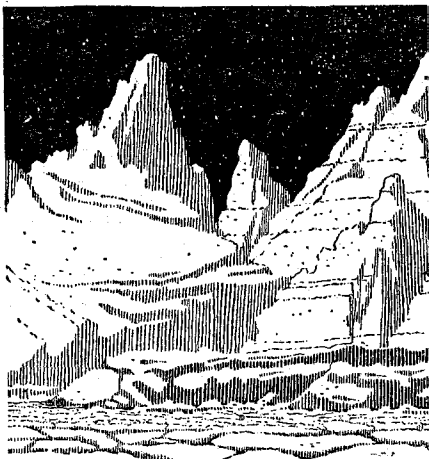
Unless he uses a pseudonym, Robert Spencer Carr is a writer whose ventures into science fiction and fantasy are known mainly if not entirely to the readers of the "slick" magazines. He will also be remembered for his serious novel, "The Bells of Saint Ivan's," and perhaps for a semi-fantasy which I have not read, "The Room Beyond" (Appleton-Century-Crofts, 1948).

"Deceptive simplicity" was the term reviewers used for an earlier Carr book, and it describes his science-fiction as well. Three of the four stories here you may have seen in *The Saturday Evening Post*. They are the title story, which deals with interstellar flight and immortality. "Morning Star"—my own favorite—in which a mysterious young woman appears at an American rocket base, and "Those Men from Mars," and the one in which a spaceship lands on the White House—and Kremlin—lawn. As a bonus there is "Mutation," a neatly grim little tale of the future.

This wedding of good, tried science-fiction themes, worked out deftly with real fictional know-how, has produced a book of tales which both the initiate and the general reader should enjoy. "Beyond Infinity" should be one of the most popular in Fantasy Press' bookcase of excellent and excellently printed books.

ICEWORLD

BY HAL CLEMENT



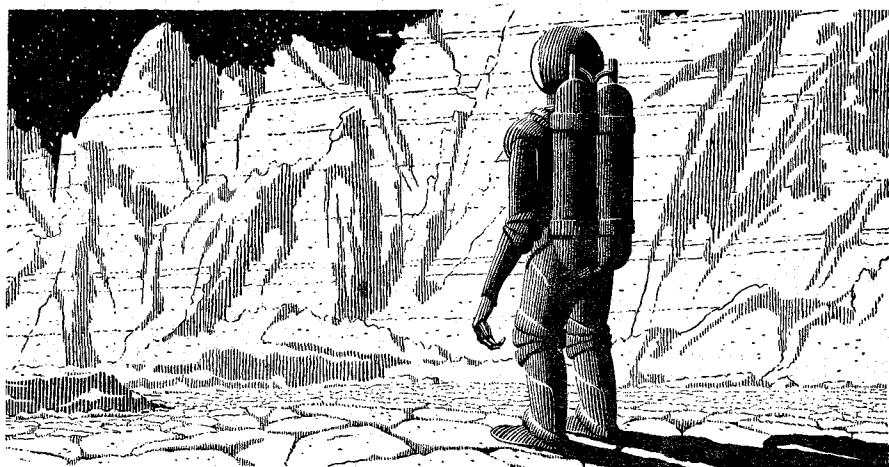
Second of Three parts. Handling the problem of a deadly narcotic, a drug runner, and a fantastically alien environment was enough—but Ken suddenly had, also, the problem of an intelligent alien race to handle, too!

Illustrated by van Dongen

SYNOPSIS

Law enforcement agencies of the planet Sarr are becoming troubled over the appearance of a new, nameless drug. It has not been reaching the planet itself; it keeps only under extreme refrigeration, and the necessary apparatus is too bulky for easy smuggling. However, its use on spaceships within the system indicates that only a single dose is needed to produce addiction; it is therefore possible at any time for a customs group to be enslaved, opening the planet wide to invasion by the narcotic.

Sallman Ken is asked to co-operate with the enforcement agency in locating the source of the drug. A non-scheduled space carrier line has come under suspicion; Ken answers their advertisement for a chemical engineer—he is scientist enough to carry such a role for a time at least—and is transported in a sealed room on one of their carriers for several days. When he is finally allowed to see out, the ship is in the vicinity of a dwarf sun. Ken is informed by his employer, Laj Draï, that his job is to improve communication with the natives of one of this star's planets. Apparently



the world contains two races: One inhabiting the flat, blue-tinted areas that cover most of the world's surface is hostile, since all remote-controlled torpedoes descending in these areas have been destroyed; the other, dwelling in the more rugged regions, is sufficiently friendly to have undertaken limited trade with the Sarrians. Draï's people cannot descend to the planet themselves in any suit they have been able to devise—the low temperature is too much for their engineering; the planet's temperature is actually well below the freezing point of the sulfur the Sarrians breathe; Ken accepts, with the hope that this world may prove the source of the drug. He sets to work with the aid of Feth Allmer, a mechanic in Draï's employ.

The cold planet is actually the earth. The man who has been trading secretly with the Sarrians is

named Wing. He is in the habit of spending summers at his home in the Rockies northeast of Lake Pend'Oreille, near the Montana-Idaho border; the homing transmitter of the Sarrians, to which they direct their remote-controlled torpedoes, is on a peak a few miles to the east. His wife has a good idea of the source of their income—the Sarrians pay in platinum and iridium nuggets—as has his oldest son Donald; but thirteen-year-old Roger Wing is determined to find out what lies behind the mysterious trips of his father into the forest. On one of his attempts he is caught in the woods by nightfall a short distance west of the Sarrian transmitter.

Ken and Feth have loaded a torpedo with chemical equipment to test Earth's atmosphere. The torpedo lands within earshot of the spot where Roger is sleeping; he

watches with surprise as samples of various metals are heated to incandescence in the little vessel's cargo compartment. The sodium, magnesium, and titanium burn; other metals oxide slightly or not at all. As the light of the magnesium fire dies out Roger voices his amazement, and the torpedo's microphones carry his voice to Ken and Feth far above. In the attempted conversation that follows, Ken mentions the word "Gold" knowing that that is sometimes used in trade with the natives of Earth. Misunderstanding him, Roger uses his wrist watch in an attempt to illuminate the now nearly dark cargo compartment, sees the crucible containing the still nearly molten gold, attempts to seize it, and is burned. Dropping the watch, he jumps back from the torpedo, and Ken starts the machine back toward the base on Mercury. It arrives, is warmed to bearable temperature, and opened.

PART 2

IX.

Ken neither knew nor cared whether Feth had seen the wrist watch. He did not think at all, though later it occurred to him that the mechanic might not have been in a position to do so—Ken had been closer to the doorway, and the little machine was rather to one side. Before any of this had gone through his conscious mind, however, he acted. A tentacle lashed out like a

striking snake; the watch and the detached gold crucible swept into its coils and vanished. In almost the same motion Ken spun toward the door, calling back as he went:

"Feth, dig up a camera somewhere. I'm going to get Draï." Ken was gone almost before the words had left his diaphragm, and for once Feth had nothing to say. His eyes were still-fixed on the mark.

There was nothing exactly weird or terrifying about it; but he was utterly unable to keep his mind from the fascinating problem of what had made it. To a creature which had never seen anything even remotely like a human being, a hand print is apt to present difficulties in interpretation. For all he could tell, the creature might have been standing, sitting or leaning on the spot, or sprawled out in the manner the Sarrians substituted for the second of those choices. There was simply no telling; the native might be the size of a Sarrian foot, making the mark with his body—or he might have been too big to get more than a single appendage into the compartment. Feth shook his head to clear it—even he began to realize that his thoughts were beginning to go in circles. He went to look for a camera.

Sallman Ken burst into the observatory without warning, but gave Draï no chance to explode. He was bursting himself with the news of the discovery—a little too much, in fact, since he kept up the talk all the way back to the shop. By the time

ASTOUNDING SCIENCE-FICTION

they got there, the actual sight of the print was something of an anticlimax to Drai. He expressed polite interest, but little more. To him, of course, the physical appearance of Earth's natives meant nothing whatever. His attention went to another aspect of the compartment.

"What's all that white stuff?"

"I don't know yet," Ken admitted. "The torpedo just got back. It's whatever Planet Three's atmosphere does to the samples I sent down."

"Then you'll know what the atmosphere is before long? That will be a help. There are some caverns near the dark hemisphere that we've known about for years, which we could easily seal off and fill with whatever you say. Let us know when you find out anything." He drifted casually out of the shop, leaving Ken rather disappointed. It had been such a fascinating discovery.

He shrugged the feeling off, collected what he could of his samples without disturbing the print, and bore them across the room to the bench on which a makeshift chemical laboratory had been set up. As he himself had admitted, he was not an expert analyst; but compounds formed by combustion are seldom extremely complex, and he felt that he could get a pretty good idea of the nature of these. After all, he knew the metals involved—there could be no metallic gases except hydrogen in Planet Three's atmosphere. Even mercury would be a

liquid, and no other metal had a really high vapor pressure even at Sarrian temperature. With this idea firmly in mind like a guiding star, Ken set blithely to work.

To a chemist, the work or a description of it would be interesting. To anyone else, it would be a boringly repetitious routine of heating and cooling, checking for boiling points and melting points, fractionating and filtering. Ken would have been quicker had he started with no preconceived notions; but finally even he was convinced. Once convinced, he wondered why he had not seen it before.

Feth Allmer had returned long since, and photographed the handprint from half a dozen angles. Now, seeing that Ken had stopped working, he roused himself from the rack on which he had found repose and approached the workbench.

"Have you got it, or are you stumped?" he queried.

"I have it, I guess. I should have guessed long ago. It's oxygen."

"What's so obvious about that? Or, for that matter, why shouldn't it be?"

"To the latter question, no reason. I simply rejected it as a possibility at first because it's so active. I never stopped to think that it's little if any more active at that temperature than sulfur is at ours. It's perfectly possible to have it free in an atmosphere—provided there's a process constantly replacing what goes into combination. You need the

same for sulfur. Blast it, the two elements are so much alike! I should have thought of that right away!"

"What do you mean—a replacement process?"

"You know we breathe sulfur and form sulfides with our metabolic processes. Mineral-eating life such as most plants on the other hand, breaks down the sulfides and releases free sulfur, using solar energy for the purpose. Probably there is a similar division of life forms on this planet—one forming oxides and the other breaking them down. Now that I think of it, I believe there are some microorganisms on Sarr that use oxygen instead of sulfur."

"Is it pure oxygen?"

"No—only about a fifth or less. You remember how quickly the sodium and magnesium went out, and what the pressure drop was with them."

"No, I don't, and I can't say that it means much to me anyway, but I'll take your word for it. What else is there in the atmosphere? The titanium took about all of it, I do remember."

"Right. It's either nitrogen or some of its oxides—I can't tell which without better controlled samples for quantity measurement. The only titanium compounds I could find in that mess were oxides and nitrides, though. The carbon oxidized, I guess—the reason there was no pressure change except that due to heat was that the principal oxide of carbon has two atoms of oxygen,

and there is therefore no volume change. I should have thought of that, too."

"I'll have to take your word for that, too, I guess. All we have to do, then, is cook up a four-to-one mixture of nitrogen and oxygen and fill the caves the boss mentioned to about two-thirds normal pressure with it?"

"That may be a little oversimplified, but it should be close enough to the real thing to let his tobacco stuff grow—if you can get specimens here alive, to start things off. It would be a good idea to get some soil, too—I don't suppose that powdering the local rock would help much. I may add in passing that I refuse even to attempt analyzing that soil. You'll have to get enough to use." Feth stared. "But that's ridiculous! We'd need tons, for a decent sized plantation!" Sallman Ken shrugged. "I know it. I tell you clearly that it will be easier to get those tons than to get an accurate soil analysis out of me. I simply don't know enough about it, and I doubt if Sarr's best chemist could hazard a prediction about the chemicals likely to be present in the solid state on that planet. At that temperature, I'll bet organic compounds could exist without either fluorine or silicon."

"I think we'd better get Draï back here to listen to that. I'm sure he was planning to have you synthesize both atmosphere and soil, so that we could set up the plantation entirely on our own."

"Perhaps you'd better. I told him my limitations at the beginning; if he still expects that, he has no idea whatever of the nature of the problem."

Feth left, looking worried, though Ken was unable to understand what particular difference it made to the mechanic. Later he was to find out.

The worried expression was still more evident when Feth returned.

"He's busy now. He says he'll talk it over with you after that suit comes back, so that any alternatives can be considered, too. He wants me to take you out to the caves so you can see for yourself what he has in mind for making them usable."

"How do we get there? They must be some distance from here."

"Ordon Lee will take us around in the ship. It's about two thousand miles. Let's get into our suits."

Ken heroically swallowed the impulse to ask why the whole subject should have come up so suddenly in the midst of what seemed a totally different matter, and went to the locker where the spacesuits were stowed. He more than suspected the reason, anyway, and looked confidently forward to having the trip prolonged until after the return of the trading torpedo.

His attention was shifted from these matters as he stepped onto the surface of Mercury, for the first time since his arrival at the station. The blistered, baked, utterly dry expanse of the valley was not particularly strange to him, since Sarr was

almost equally dry and even hotter; but the blackness of the sky about the sun and the bareness of the ground contributed to a *dead* effect that he found unpleasant. On Sarr, plant life is everywhere in spite of the dryness; and plants with which Ken was familiar were more crystalline than organic and needed only the most minute amounts of liquid for their existence.

Also, Sarr has weather, and Mercury does not. As the ship lifted from the valley, Ken was able to appreciate the difference. Mercury's terrain is rugged, towering and harsh. The peaks, faults and meteor scars are unsoftened by the blurring hand of erosion. Shadows are dark where they exist at all, relieved only by light reflected from nearby solid objects. Lakes and streams would have to be of metals like lead and tin, or simple compounds like the "water" of Sarr—copper chloride, lead bromide, and sulfides of phosphorus and potassium. The first sort are too heavy, and have filtered down through the rocks of Mercury, if they ever existed at all; the second are absent for lack of the living organisms that might have produced them. Sallman Ken, watching the surface over which they sped, began to think a little more highly even of Earth.

A vessel capable of exceeding the speed of light by a factor of several thousand makes short work of a trip of two thousand miles, even when the speed is kept down to a value that will permit manual control.

The surface was a little darker where they landed, with the sun near the horizon instead of directly overhead and the shadows correspondingly longer. It looked and was colder. However, the vacuum and the poor conducting qualities of the rock made it possible even here to venture out in ordinary spacesuits, and within a few moments Ken, Feth and the pilot were afoot gliding swiftly toward a cliff some forty feet in height.

The rock surface was seamed and cracked, like nearly all Mercurian topography. Into one of the wider cracks Lee unhesitatingly led the way. It did not lead directly away from the sun, and the party found itself almost at once in utter darkness. With one accord they switched on their portable lamps and proceeded.

The passage was rather narrow at first, and rough enough on both floor and walls to be dangerous to spacesuits. This continued for perhaps a quarter of a mile, and quite suddenly opened into a vast, nearly spherical chamber. Apparently Mercury had not always been without gases—the cave had every appearance of a bubble blown in the igneous rock. The crack through which the explorers had entered extended upward nearly to its top, and downward nearly as far. It had been partly filled with rubble from above, which was the principal reason the going had been so difficult. The lower part of the bubble also contained a certain amount of loose rock. This

looked as though it might make a climb down to the center possible, but Ken did not find himself particularly entranced by the idea.

"Is there just this one big bubble?" he asked.

Ordon Lee answered.

"No; we have found several, very similar in structure, along this cliff, and there are probably others with no openings into them. I suppose they could be located by echo-sounders if we really wanted to find them."

"It might be a good idea to try that," Ken pointed out. "A cave whose only entrance was one we had drilled would be a lot easier to keep air-tight than this thing."

Feth and Lee grunted assent to that. The latter added a thought of his own. "It might be good if we could find one well down; we could be a lot freer in drilling—there'd be no risk of a crack running to the surface."

"Just one trouble," put in Feth. "Do we have an echo-sounder? Like Ken on his soil analysis, I have my doubts about being able to make one." Nobody answered that for some moments.

"I guess I'd better show you some of the other caves we've found already," Lee said at last. No one objected to this, and they retraced their steps to daylight.

In the next four hours they looked at seven more caves, ranging from a mere hemispherical hollow in the very face of the cliff to a gloomy, frighteningly deep bubble reached by a passageway just barely nego-

tiable for a spacesuited Sarrian. This last, in spite of the terrors of its approach and relative smallness, was evidently the best for their purpose out of those examined; and Lee made a remark to that effect as they doffed spacesuits back in the *Karella*.

"I suppose you're right," Ken admitted, "but I'd still like to poke deeper. Blast it, Feth, are you sure you couldn't put a sounder together? You never had any trouble with the gadgets we used in the torpedoes."

"Now you're the one who doesn't realize the problem," the mechanic replied. "We were using heating coils, thermometers, pressure gauges, and photocells for the other stuff. Those come ready made. All I did was hook them up to a regular achronic transmitter—we couldn't use ordinary radio because the waves would have taken ten or twelve minutes for the round trip. I didn't make anything—just strung wires."

"I suppose you're right," Ken admitted. "In that case, we may as well go back to the station and lay plans for sealing off that last cavern." He kept a sharp look on his two companions as he said this, and succeeded in catching the glance Feth sent at the clock before his reply. It almost pleased him.

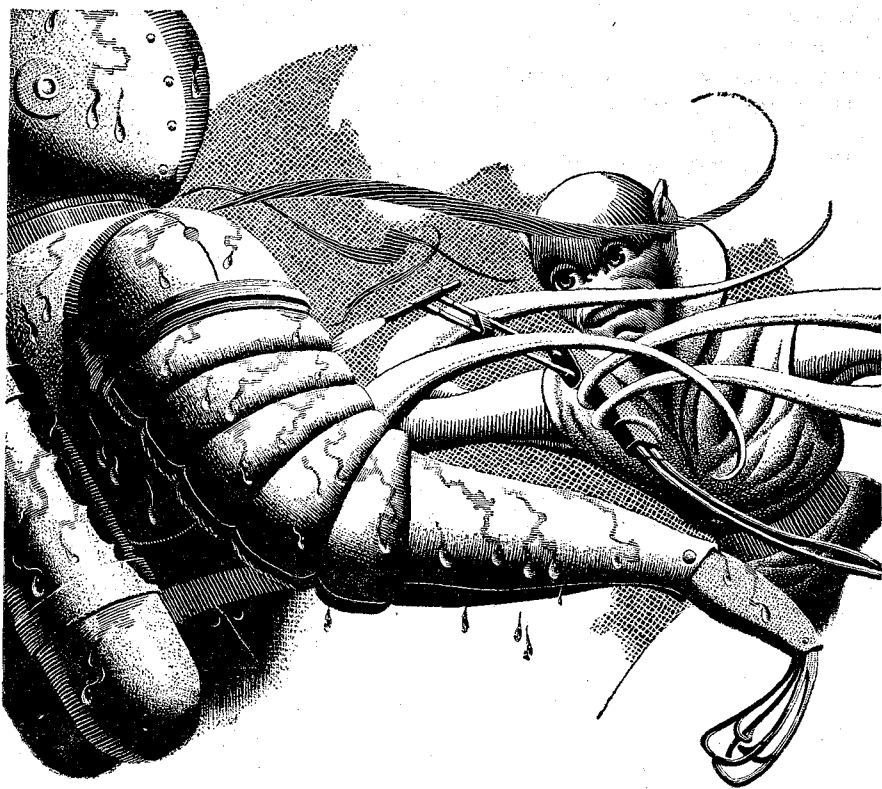
"Hadn't we better get some photographs and measurements of the cave first?" Ordon Lee cut in. "We'll need them for estimates on how much gas and soil will be

needed, regardless of how it's to be obtained."

Ken made no objection to this; there was no point in raising active suspicion, and he had substantiated his own idea. He was being kept away from the station intentionally. He helped with the photography, and subsequently with the direct measurement of the cave. He had some trouble refraining from laughter; affairs were so managed that the party had returned to the ship and doffed spacesuits each time before the next activity was proposed. It was very efficient, from one point of view. Just to keep his end up, he proposed a rest before returning to the base, and was enthusiastically seconded by the others.

Then he decided to compute the volume of the cave from their measurements, and contrived to spend a good deal of time at that—legitimately, as the cave was far from being a perfect sphere. Then he suggested getting some samples of local rock to permit an estimate of digging difficulties, and bit back a grin when Feth suggested rather impatiently that that could wait. Apparently he had outdone the precious pair at their own game—though why Feth should care whether or not they stayed longer than necessary was hard to see.

"It's going to take quite a lot of gas," he said as the *Karella* lunged into the black sky. "There's about two million cubic feet of volume there, and even the lower pressure



we need won't help much. I'd like to find out if we can get oxygen from those rocks; we should have picked up a few samples, as I suggested. We're going to have to look over the upper area for small cracks, too—we have no idea how air-tight the darn thing is. I wish we could . . . say Feth, aren't there a lot of radar units of one sort or another around here?"

"Yes, of course. What do you want them for? Their beams won't penetrate rock."

"I know. But can't the pulse-interval on at least some of them be altered?"

"Of course. You'd have to use a different set every time your range scale changed, otherwise. So what?"

"Why couldn't we—or you, anyway—set one up with the impulse actuating a sounder of some sort which could be put in contact with the rock, and time *that* return-echo picked up by a contact-mike? I know the impulse rate would be slower, but we could calibrate it

easily enough."

"One trouble might be that radar units are usually not very portable. Certainly none of the warning devices in this ship are."

"Well, dismantle a torpedo, then. They have radar altimeters, and there are certainly enough of them so one can be spared. We could have called base and had them send one out to us—I bet it would have taken you only a few hours. Let's do that anyway—we're still a lot closer to the caves than to the base."

"It's easier to work in the shop; and anyway, if we go as far underground as this idea should let us—supposing it works—we might as well scout areas closer to the base, for everyone's convenience." Ordon Lee contributed the thought without looking from his controls.

"Do you think you can do it?" Ken asked the mechanic.

"It doesn't seem too hard," the latter answered. "Still, I don't want to make any promises just yet."

"There's a while yet before that suit comes back. We can probably find out before then, and really have some material for Draï to digest. Let's call him now—maybe he'll have some ideas about soil."

The eyes of the other two met for a brief moment; then Lee gestured to the radio controls.

"Go ahead; only we'll be there before you can say much."

"He told me you were going to manufacture soil," reminded Feth.

"I know. That's why I want to talk to him—we left in too much of

a hurry before." Ken switched on the radio while the others tried to decide whether or not he was suspicious about that hasty departure. Neither dared speak, with Ken in the same room, but once again their eyes met, and the glances were heavy with meaning.

Draï eventually came to the microphone at the other end and Ken began talking with little preliminary.

"We've made measurements of the smallest cave we can find, so far at least, and figured out roughly how much air you're going to need to fill it. I can tell you how much soil you'll need to cover the bottom, too, if you plan to use all of it. The trouble is, even if I can analyze the soil—even as roughly as I did the air—you're facing a supply problem that runs into tons. I can't make that much in the laboratory in any reasonable time. You're going to have to get it ready-made."

"How? We can't land a person on Planet Three, let alone a freighter."

"That we'll see presently. But that's not the suggestion I wanted to make—I see we're nearly there, so we can finish this chat in person. Think this over while we're going in: whatever sort of atmosphere a planet may have, I don't see how the soils can be *too* different—at least in their principal constituents. Why don't you get a shipload of Sarrian soil?"

Draï gaped for a moment. "But . . . bacteria—"

"Don't be silly; nothing Sarrian could live at that temperature. I admit it would be safer to use soil from Planet Three, and we may be able to. But if we can't, then you have my advice, if you're interested in speed—even if I knew the composition, it would take me a lot longer than a week to make a hundred tons of dirt!" He broke the connection as the *Karella* settled to the ground.

X.

Ken wasted no time donning his spacesuit and leaving the ship with the others. Once inside the station and out of the heavy garment, he hastened to the shop to see how far out the returning test suit was; then, satisfied with its progress as recorded there, he headed for the observatory to continue his conversation with Laj Draï. He met no one on the way. Lee had stayed on the ship, Feth had disappeared on some errand of his own the moment the lock had closed behind them, and the rest of the personnel kept pretty much to themselves anyway. Ken did not care this time whether or not he were seen, since he planned a perfectly aboveboard conversation.

He was interrupted, however, in planning just how to present his arguments, by the fact that the observatory door was locked.

It was the first time he had encountered a locked door in the station since his arrival, and it gave him to think furiously. He was

morally certain that the trading torpedo had returned during the absence of the *Karella*, and that there was a load of tofacco somewhere around the building. If this were the only locked door—and it was, after all, the room Draï used as an office—

Ken pressed his body close to the door, trying to tell by sound whether anyone were in the room. He was not sure; and even if there were not, what could he do? A professional detective could probably have opened the door in a matter of seconds. Ken, however, was no professional; the door was definitely locked, as far as he was concerned. Apparently the only thing to do was seek Draï elsewhere.

He was ten yards down the ramp, out of sight of the observatory door, when he heard it open. Instantly he whirled on his toes and was walking back up the incline as though just arriving. Just as he reached the bend that hid the door from him he heard it close again; and an instant later he came face to face with Feth. The mechanic, for the first time since Ken had known him, looked restless and uneasy. He avoided Ken's direct gaze, and wound the tip of one tentacle more tightly about a small object he was carrying, concealing it from view. He brushed past with a muttered greeting and vanished with remarkable speed around the turn of the ramp, making no answer to Ken's query as to whether Draï were in the observatory.

Ken stared after him for seconds after he had disappeared. Feth had

always been taciturn, but he had seemed friendly enough. Now it almost seemed as though he were angry at Ken's presence.

With a sigh, the pro tem detective turned back up the ramp. It wouldn't hurt to knock at the door, anyway. The only reason he hadn't the first time was probably a subconscious hope that he would find Draï somewhere else, and feel free to investigate. Since his common sense told him he couldn't investigate anyway, he knocked.

It was just as well he hadn't made any amateur efforts at lock-picking, he decided as the door opened. Draï was there, apparently waiting for him. His face bore no recognizable expression; either whatever bothered Feth had not affected him, or he was a much better actor than the mechanic. Ken, feeling he knew Feth, inclined to the former view.

"I'm afraid I'm not convinced of the usability of any Sarrian soil," Draï opened the conversation. "I agree that most of the substances present in it, as far as I know, could also be present at Planet Three's temperature; but I'm not so sure the reverse is true. Mightn't there be substances that would be solid or liquid at that temperature and gaseous at ours, so that they would be missing from any we brought from home?"

"I hadn't thought of that," Ken admitted. "The fact that I can't think of any such substances doesn't mean they don't exist, either. I can skim

through the handbook and see if there are any inorganic compounds that would behave that way, but even then might miss some—and if their life is at all analogous to ours, there are probably a couple of million organic compounds—for which we *don't* have any catalogue. No, blast it, I guess you're right; we'll have to take the stuff from the planet itself." He lapsed into silent thought, from which Draï finally aroused him.

"Do you really think you're going to be able to get to the surface of that world?"

"I still can't see why we shouldn't," replied Ken. "It seems to me that people have visited worse ones before, bad as that is. Feth is pessimistic about it, though, and I suppose he has more practical knowledge of the problem than I. We can make more definite plans in that direction when the suit comes back, which shouldn't be long now. According to the instruments it started back a couple of hours ago."

"That means nearly three days before you're sure. There must be something else—say, you claim it's the presence of a conducting atmosphere that makes the heat loss on Planet Three so great, don't you?"

"Sure. You know as well as I that you can go out in an ordinary space-suit light-years from the nearest sun; radiation loss is easy to replace. Why?"

"I just thought—there are other planets in this system. If we could find an airless one roughly the same temperature as Three, we might get

soil from that."

"That's an idea." Ken was promptly lost in enthusiasm again. "As long as it's cold enough, which is easy in this system—and Three has a satellite—you showed it to me. We can go there in no time in the *Karella*—and we could pick up that suit in space while we're at it. Collect Feth, and let's go!"

"I fear Feth will not be available for a while," replied Drai. "Also," he grimaced, "I have been on that satellite, and its soil is mostly pumice dust; it might have come straight from the Polar Desert on Sarr. We'd better consider the other possibilities before we take off. The trouble is, all we've ever noted about the other planets of the system is their motions. We wanted to avoid them, not visit them. I do remember, I think, that Five and Six do have atmospheres, which I suppose writes them off the list. You might see where Four is just now, will you? I assume you can interpret an ephemeris."

Ken decided later that courtesy was really a superfluous facet of character. Had it not been for the requirements of courtesy he would not have bothered to make an answer to this suggestion, and had not most of his attention been concentrated on the answer he would never have made the serious error of walking over to the cabinet where the paper in question was located, and reaching for it. He realized just as he touched the paper what he was doing, but

with a stupendous effort of will he finished his assurance that he could read an ephemeris and completed the motion of obtaining the document. He felt, however, as though a laboratory vacuum pump had gone to work on his stomach as he turned back to his employer.

That individual was standing exactly where he had been, the expression on his face still inscrutable.

"I fear I must have done our friend Feth an injustice," he remarked casually. "I was wondering how you had come to imply that a round trip to Sarr would take only a week. I realize of course that your discoveries were made quite accidentally, and that nothing was farther from your plans than vulgar spying; but the problem of what to do about your unfortunate knowledge remains. That will require a certain amount of thought. In the meantime, let us continue with the matter of Planet Four. Is it in a convenient position to visit, and could we, as you suggested, pick up the torpedo carrying your suit without going too far from course?"

Ken found himself completely at a loss. Drai's apparently unperturbed blandness was the last attitude he expected under the circumstances. He could not believe that the other was really that indifferent; something unpleasant must be brewing between those steady eyes, but the face gave him no clue. As best he could he tried to match his employer's attitude. With an effort he turned his attention to the ephemeris.

eris he was holding, found the proper terms, and indulged in some mental arithmetic.

"The planets are just about at right angles as seen from here," he announced at length. "We're just about between the sun and Three, as you know; Four is in the retrograde direction, roughly twice as far from us. Still, that shouldn't mean anything to the *Karella*."

"True enough. Very well, we will take off in an hour. Get any equipment you think you will need on board before then—better use engineering armor for Planet Four, even if it doesn't have air. You'll have to point out where they are to whoever I get to help you."

"How about Feth?" Ken had got the idea that the mechanic was in disgrace for betraying the secret of their location.

"He won't be available for some time—he's occupied. I'll give you a man—you can be picking out what you want in the shop; I'll send him there. One hour." Laj Draï turned away, intimating that the interview was at an end.

The man he sent proved to be a fellow Ken had seen around, but had never spoken to. The present occasion did little to change that; he was almost as taciturn as Feth, and Ken never did learn his name. He did all he was asked in the way of moving material to the *Karella*, and then disappeared. The take-off was on schedule.

Ordon Lee, who evidently had his

orders, sent the vessel around the planet so rapidly that the acceleration needed to hug the curving surface exceeded that produced by the planet's gravity; the world seemed to be above them, to the inhabitants of the ship. With the sun near the horizon behind and the glowing double spark of Earth rising ahead, however, he discontinued the radial acceleration and plunged straight away from the star. Under the terrific urge of the interstellar engines, the Earth-Luna system swelled into a pair of clearly marked disks in minutes. Lee applied his forces skillfully, bringing the vessel to a halt relative to the planet and half a million miles sunward of it.

Draï gestured to Ken, indicating a control board similar to that in the shop:

"That's tuned in to your torpedo; the screen at the right is a radar unit you can use to help find it. There's a compass at the top of the panel, and this switch will cause the torpedo to emit a homing signal." Ken silently placed himself at the controls, and got the feel of them in a few minutes. The compass gave rather indefinite readings at first because of the distance involved; but Lee was quickly able to reduce that, and in a quarter of an hour the still invisible projectile was only a dozen miles away. Ken had no difficulty in handling from that point in, and presently he and Draï left the control room and repaired to a cargo chamber in the *Karella's* belly, where the torpedo was warm-

ing up.

This time it was the suit still clamped to the outside that took all their interest. The whole thing had been left at the bottom of the atmosphere for a full hour, and Ken felt that any serious faults should be apparent in that time. It was a little discouraging to note that air was condensing on the suit as well as the hull; if the heaters had been working properly, some sort of equilibrium should have been reached between the inner and outer layers of the armor during the few hours in space. More accurately, since an equilibrium had undoubtedly been reached, it should have been at a much higher temperature.

The trickling of liquid air did cease much sooner on the armor, however, and Ken still had some hope when he was finally able to unclamp the garment and take it in for closer examination.

The outer surface of the metal had changed color. That was the first and most obvious fact. Instead of the silvery sheen of polished steel, there was a definitely bluish tint on certain areas, mostly near the tips of the armlike handling extensions and the inner surfaces of the legs. Ken was willing to write off the color as a corrosion film caused by the oxygen, but could not account for its unequal distribution. With some trepidation he opened the body section of the massive suit, and reached inside.

It was cold. Too cold for comfort.

The heating coils might have been able to overcome that, but they were not working. The recorder showed a few inches of tape—it had been started automatically by a circuit which ran from a pressure gauge in the torpedo through one of the suit radio jacks as soon as atmospheric pressure had been detectable—and that tape showed a clear story. Temperature and pressure had held steady for a few minutes; then, somewhere about the time the torpedo must have reached the planet's surface, or shortly thereafter, they had both started erratically downward—very erratically, indeed; there was even a brief rise above normal temperature. The recorder had been stopped when the temperature reached the freezing point of sulfur, probably by air solidifying around its moving parts. It had not resumed operation. The planet was apparently a heat trap, pure and simple.

There was no direct evidence that the suit had leaked gas either way, but Ken rather suspected it had. The bluish tint on portions of the metal might conceivably be the result of flame—flaming oxygen, ignited by jets of high-pressure sulfur coming from minute leaks in the armor. Both sulfur and oxygen support combustion, as Ken well knew, and they do combine with each other—he made a mental note to look up the heats of formation of any sulfides of oxygen that might exist.

He turned away from the debacle at last.

"We'll let Feth look this over when we get back," he said. "He may have better ideas about just how and why the insulation failed. We may as well go on to Planet Four and see if it has anything that might pass for soil."

"We've been orbiting around it for some time, I imagine," Draï responded. "Lee was supposed to head that way as soon as we got your suit on board, but he was not to land until I returned to the control room."

The two promptly glided forward, pulling their weightless bodies along by means of the grips set into the walls, and shot within seconds through the control room door—even Ken was getting used to non-standard gravity and even to none at all.

Draï's assumption proved to be correct; drive power was off, and Mars hung beyond the ports. To Sarrian eyes it was even more dimly lighted than Earth, and like it obviously possessed of an atmosphere. Here, however, the atmospheric envelope was apparently less dense. They were too close to make out the so-called canals, which become river valleys when observation facilities are adequate, but even rivers were something new to the Sarrians. They were also too close to see the polar caps from their current latitude, but as the *Karella* drifted southward a broad expanse of white came into view. The cap was nowhere near the size it had been two months before, but again it was a

completely strange phenomenon to the gazing aliens.

Or, more accurately, almost completely strange. Ken tightened a tentacle about one of Draï's.

"There was a white patch like that on Planet Three! I remember it distinctly! There's *some* resemblance between them, anyway."

"There are two, as a matter of fact," replied Draï. "Do you want to get your soil from there? We have no assurance that it is there that the tofacco grows on Planet Three."

"I suppose not; but I'd like to know what the stuff is anyway. We can land at the edge of it, and get samples of everything we find. Lee?"

The pilot looked a little doubtful, but finally agreed to edge down carefully into atmosphere. He refused to commit himself to an actual landing until he had found how rapidly the air could pull heat from his hull. Neither Draï nor Ken objected to this stipulation, and presently the white, brown and greenish expanse below them began to assume the appearance of a landscape instead of a painted disk hanging in darkness.

The atmosphere turned out to be something of a delusion. With the ship hanging a hundred feet above the surface, the outside pressure gauges seemed very reluctant to move far from zero. Pressure was about one fiftieth of Sarr normal. Ken pointed this out to the pilot, but Ordon Lee refused to permit his hull to touch ground until he had watched his outside pyrometers for

fully fifteen minutes. Finally satisfied that heat was not being lost any faster than it could be replaced, he settled down on a patch of dark-colored sand, and listened for long seconds to the creak of his hull as it adapted itself to the changed load and localized heat loss. At last, apparently satisfied, he left his controls and turned to Ken.

"If you're going out to look this place over, go ahead. I don't think your armor will suffer any worse than our hull. If you have trouble anywhere, it will be with your feet—loss through the air is nothing to speak of. If your feet get cold, though, don't waste time—get back inside!"

Ken cast a mischievous glance at Draï. "Too bad we didn't bring two suits," he said. "I'm sure you'd have liked to come with me."

"Not in a hundred lifetimes!" Draï said emphatically. Ken laughed outright. Curiously enough, his own original horror of the fearful chill of these Solar planets seemed to have evaporated; he actually felt eager to make the test. With the help of Draï and Lee he climbed into the armor they had brought from Mercury, sealed it, and tested its various working parts. Then he entered the air lock of the *Karella*, and observed his instruments carefully while it was pumped out. Still nothing appeared to be wrong, and he closed the switch actuating the motor of the outer door.

For some reason, as the Martian landscape was unveiled before him,

his mind was dwelling on the curious discoloration of the suit that had been exposed to Planet Three's atmosphere, and wondering if anything of the sort was likely to happen here.

Curiously enough, one hundred sixty million miles away a thirteen-year-old boy was trying to account for a fire which seemed to have burned over a small patch of brush, isolated by bare rock, on a hillside five miles west of his home.

XI.

Even to an Earthman, Mars is not a world to promote enthusiasm. It is rather cold at the best of times, much too dry, and woefully lacking in air—breathable or otherwise. The first and last of these points struck Ken most forcibly.

The landscape in front of him was very flat. It was also very patchy. In some spots bare rock showed, but those were few and far between. Much of the area seemed to be dark, naked soil, with bits of green, brown, red and yellow mingling in the general background. Nearly half of the landscape seemed to be composed of the patches of white, which had seemed to be a solid mass from space. Probably, Ken realized, they formed a solid covering closer to the center of the white region; they had landed on its edge, as planned.

He took a careful step away from the ship's side. The gravity was less than that of Sarr, but distinctly

greater than on Mercury, and the armor was a severe burden. The two tentacles inside his right "sleeve" forced the clumsy pipe of steel downward almost to the ground, and manipulated the handlers at the end. With some difficulty, he scraped loose a piece of dark brown soil and raised it to eye level. He locked the "knees" of the armor and settled back on the taillike prop that extended from the rear of the metal trunk, so that he could give all his attention to examining the specimen.

The glass of his face plate showed no signs of differential contraction so far, but he carefully avoided letting the soil touch it during the examination. He almost forgot this precaution, however, when he saw the tiny varicolored objects on the surface of the sample. Weird as they were in shape, they were unquestionably plants—tiny, oddly soft-looking compared to the crystalline growths of Sarr, but still plants. And they lived in this frightful cold! Already those nearest the metal of his handler were shriveling and curling, cold as the outside of his armor already must be. Eagerly Ken reported this to the listeners inside.

"This life must have something in common with that of Three," he added. Both must run on chemical energy of the same general sort, since there's no important difference in their temperatures. This soil must have all the elements necessary, even if the compounds aren't



quite right for what we want—who ever heard of a life form that didn't have a good deal of latitude that way?" He looked back at the sample he was holding. "It looks a little different around the edges, as though the heat of my armor were making some change in it. You may be right, Drai—there may be some volatile substance in this soil that's evaporating now. I wonder if I can trap it?" He lapsed into thought, dropping his specimen.

"You can try afterward. Why not investigate the white patches?" called Drai. "And the rocks, too; they might be something familiar—and soils are made from rock, after all." Ken admitted the justice of this, hitched himself off the rear prop, unlocked his leg joints, and resumed his walk away from the ship.

So far, he had felt no sign of cold, even in his feet. Evidently the soil was not a very good conductor of heat. That was not too surprising, but Ken made a mental note to be careful of any patches of solid rock he might encounter.

The nearest of the white areas was perhaps thirty yards from the airlock door. Reaching it quickly enough in spite of the weight of his armor, Ken looked it over carefully. He could not bend over to examine its texture, and was a little uneasy about picking it up; but remembering that the handlers of his armor extended some distance beyond the actual tips of his tentacles, as well as the fact that the first sample had

been harmless, he reached down and attempted to scrape up a piece.

This seemed easy enough. The handler grated across the surface, leaving a brown streak behind—evidently the white material formed a very thin layer on the ground. Raising the sample to eye level, however, Ken discovered that he had nothing but dark-colored sand.

Excusably puzzled, he repeated the process, and this time was quick enough to see the last of the white material vanish from the sand grains. "You were right, Laj," he said into his transmitter. "There's something here that's really volatile. I haven't got enough for a good look, yet—I'll try to find a deeper deposit." He started forward again, toward the center of the white patch.

The expanse was perhaps fifty yards across, and Ken judged that the volatile coating might be thicker in the center. This proved to be the case, but it never became heavy enough to impede even his progress. His trail was clearly marked by bare soil, as the stuff faded eerily out of sight around each footprint. Ken, though he could have looked behind in his armor without turning his whole body, did not notice this, but the watchers from the ship did. Drai remarked on it over the radio; and Ken responded:

"Tell me if it stops—maybe that will be a place where it's thick enough to pick some of the stuff up. I'd like to get a close look at it before it evaporates. Right now, I can't imagine what it might be, and

I need information badly in order to make even an educated guess."

"The trail is getting narrower now—there are separate spots which outline the shape of the feet of your armor, instead of broad circular areas that blend into each other. A little farther ought to do it."

A little farther did. Ken was not quite to the center of the white patch when Draï reported that he had ceased to leave a trail. He promptly stopped, propped himself as he had before, and scooped up a fresh handful of the evanescent substance. This time there was practically no sand included; the material was fully an inch deep. The mass on his handler began to shrink at once, but not so rapidly as to prevent his getting a fairly long look. It was crystalline, millions of minute facets catching and scattering the feeble sunlight; but the individual crystals were too tiny to permit him to determine their shape. It was gone before he was really satisfied, but there seemed little likelihood of his getting a better look. Somehow a sample would have to be obtained—and analyzed. He thought he saw how that might be done, but some careful preparation would be necessary. Announcing this fact over his suit radio, he prepared to return to the ship.

Perhaps, in the half-seated attitude he had been holding, his feet had been partly out of contact with the armor; perhaps in his

single-minded interest in things outside he simply had not noticed what was happening. Whatever the cause, it was not until he stood up that the abrupt, stabbing blade of cold seared straight from his feet to his brain. For an instant he settled back on his prop, trying to draw his feet from the biting touch of what was supposed to be insulation; then, realizing that matters would only grow worse if he delayed, he forced himself into action. Barely able to bite back a scream of anguish, he strained every muscle forcing the unwieldy mass of metal toward the air lock; and even through his pain, the thought came driving—no wonder the trail had become narrower; the feet of his armor must be nearly at the temperature of their surroundings. From five hundred degrees above zero Centigrade to fifty below is quite a temperature gradient for a scant three inches of steel, vacuum space, fluid coils, and insulating fiber to maintain, even with a powerful heating coil backing up the high-temperature side of the barrier.

The pain grew less as he struggled toward the lock, but the fact did not make him any happier; it terrified him. If he should lose control of his feet, he would die within sight of the *Karella's* crew, for there was not another suit of special armor aboard that could be worn to rescue him.

Now his face was cold, too—he must be losing radiation even through the special glass of the face plate. His tentacle tips were feeling

the chill, but not so badly; the fact that the deadly whiteness had touched only the handlers, inches beyond the "inhabited" parts of the sleeve, was helping there. He had reached the edge of the area of death, and only thirty yards of bare ground lay between him and the lock. That ground was cold, too. It must be as cold as the other area; but at least it did not seem to drink heat. The lock door was open as he had left it, a metal-lined cavern that seemed to draw away as he struggled forward. He was numb below the lower knees, now; for the first time he blessed the clumsy stiffness of the armor legs, which made them feel and act like stilts, for that was all that enabled him to control the feet. Once he stumbled, and had time to wonder if he would ever be able to get the clumsy bulk erect again; then he had caught himself in some way—he never learned how, and no one on the ship could tell him—and was reeling forward again. Ten yards to go—five—two—and he brought up against the hull of the *Karella* with a clang. One more step and he was inside the lock. Two, and he was out of the swing of the massive door.

With frantic haste he swung the sleeve of his armor at the closing switch. He hit it—hit it hard enough to bend the toggle, but the circuit was closed and the door thudded shut behind him, the sound of its closing coming through the metal of floor and suit. Then came

the air, automatically, pouring into the lock chamber, condensing on the body of his armor, freezing into a yellow crust on the extremities. With the pressure up, the inner door swung wide, revealing Draï and Ordon Lee in the corridor beyond. The former shrank from the fierce chill that poured from the chamber; the pilot, thinking faster, leaped to a locker nearby and seized a welding torch. Playing the flame of this ahead of him he approached Ken carefully.

The crust of sulfur boiled away instantly in the flame, to be replaced almost as fast when the tongue of light swung elsewhere. Long seconds passed before the metal was warm enough to stay clear, and more before it could be touched, and the almost unconscious Ken extracted. Minutes more passed before the throbbing agony receded from his limbs, and he was able to talk coherently, but at last he was satisfied that no permanent damage had been done. He had not actually been frostbitten, though judging by the color of his skin he had come dangerously near to it.

Draï and Lee, amazed and horrified at the results of the brief sortie, felt both emotions redoubled as they heard of his plans for another. Even Draï, interested as he was in obtaining useful information, made a half-hearted attempt to dissuade him from the project. Ken refused to be dissuaded, and his employer did not have too much difficulty in

consoling himself—after all, it was Ken's health.

The instructions to bring "whatever he thought he would need" had been obeyed, and Ken spent some time searching through the pile of apparatus from the Mercurian laboratory. What he found seemed to satisfy him, and he made a number of careful preparations which involved some very precise weighing. He then carried several items of equipment to the air lock, and finally donned the armor again, to Ordon Lee's undisguised admiration.

From the control-room port, Draï and the pilot watched Ken's hasty trip back to the scene of his earlier trouble. He followed his earlier trail, which was still clearly visible, and carefully avoided touching the whiteness with any part of his armor. Arrived at the point where his cooling boots had been unable to boil their way down to solid ground, he stopped. The watchers were unable to make out his actions in detail, but apparently he set some object on the ground, and began rolling it about as the white substance evaporated from around it. Presently this ceased to happen, as its temperature fell to that of its surroundings; then Ken appeared to pick it up and separate it into two parts. Into one of these he scooped a quantity of the mysterious stuff, using an ordinary spoon. Then the two halves of the thing were fastened together again, and the scientist beat a hasty retreat toward the air lock.

Draï as promptly headed for the inner door of the chamber, expecting to see what was going on; but the portal remained closed. He heard the hissing of air as pressure was brought up, and then nothing. He waited for some minutes, wondering more and more, and finally went slowly back to the control room. He kept looking back as he went, but the valve remained sealed.

As he entered the control room, however, Lee had something to report.

"He's pumping the lock down again," the pilot said, gesturing to a flaring violet light on the board. Both Sarrians turned to the port of the side toward the air lock, Lee keeping one eye on the indicator that would tell them when the outer door opened. It flashed in a matter of seconds, and the watchers crowded eagerly against the transparent panel, expecting Ken's armored figure to appear. Again, however, nothing seemed to happen.

"What is the fellow up to? Draï asked the world at large, after a minute or so. Lee treated the question as rhetorical, but did shift part of his attention back to the control board. Even here, however, fully five minutes passed without anything occurring; then the outer door closed again. Calling Draï's attention to this, he looked expectantly at the pressure indicator, which obediently flashed a report of rising pressure. They waited no longer, but headed down the corridor side by side.

This time Ken appeared to have finished his work; the inner door was open when they reached it. He had not permitted his suit to get so cold this time, it seemed; only a light dew dimmed its polish. Within a minute or so Lee was able to help him emerge. He was wearing a satisfied expression, which did not escape the watchers.

"You found out what it was!" Draï stated, rather than asked.

"I found out something which will let me figure out what it is, very shortly," replied Ken.

"But what did you do? Why did you go out twice?"

"You must have seen me putting a sample into the pressure bomb. I sealed it in, and brought it inside so it would all evaporate and so that the pressure gauge on the bomb would be at a temperature where I could trust it. I read the pressure at several temperatures, and weighed the bomb with the sample. I had already weighed it empty—or rather, with the near-vacuum this planet uses for air inside it. The second time I opened the door was to let off the sample, and to make a check at the same temperature with a sample of the planet's air—after all, it must have contributed a little to the pressure the first time."

"But what good would all that do?"

"Without going into a lot of detail, it enabled me to find out the molecular weight of the substance. I did not expect that to be very conclusive, but as it happened I think

it will be; it's so small that there aren't many possible elements in it—certainly nothing above fluorine, and I think nothing above oxygen. I'll concede that I may be off a unit or so in my determination, since the apparatus and observing conditions were not exactly ideal, but I don't think it can be much worse than that."

"But what is it?"

"The molecular weight? Between eighteen and nineteen, I got."

"What has that weight, though?"

"Nothing at all common. I'll have to look through the handbook, as I said. Only the very rarest elements are that light."

"If they're so rare, maybe the stuff is not so important for life after all." Ken looked at Draï to see if he were serious.

"In the first place," he pointed out, seeing that the other had not been joking, "mere rarity doesn't prove that life doesn't need it. We use quite respectable quantities of fluorine in our bodies, not to mention zinc, arsenic and copper. This other form of life may well do the same. In the second place, just because an element is rare on Sarr doesn't prove it would be so on Planet Three—it's a much bigger world, and could easily have held considerable quantities of the lighter elements during its original formation, even if they had been there as uncombined gases."

The group had been walking toward Ken's room, where he had stored most of his apparatus, as

they talked. Reaching it at this point, they entered. Ken draped himself without apology on the only rack, and began to flip through the pages of the chemical handbook, in the section devoted to inorganic compounds. He realized that his mysterious substance could contain carbon, but it certainly could not contain more than one atom per molecule, so there was no danger of its being a really complex organic material.

There were, in fact, just eight elements likely to be present; and the laws of chemistry would put considerable restriction on the possible combinations of those eight. The lightest of these was hydrogen, of course; and to the hydrogen compounds Ken turned, since they came first in that section of the handbook.

Drai had moved to a position from which he could oversee the pages that Ken was reading; the less interested or less excitable Lee stayed near the door and waited silently. He was more prepared than his employer for a long wait while the scientist made his search; and he was correspondingly more surprised when Ken, almost as soon as he began reading, suddenly stiffened in a fashion which indicated he had found something of interest. Draï saw the action as well.

"What is it?" he asked at once. Both Ken and Lee realized that the "it" referred to the substance, not the cause of Ken's interest; Draï assumed without thought that his

scientist had found what he was seeking.

"Just a moment. There's something that doesn't quite agree—but the rest is too perfect . . . wait a minute—" Ken's voice trailed off for a moment; then, "Of course. This is under normal pressure." He looked up from the book.

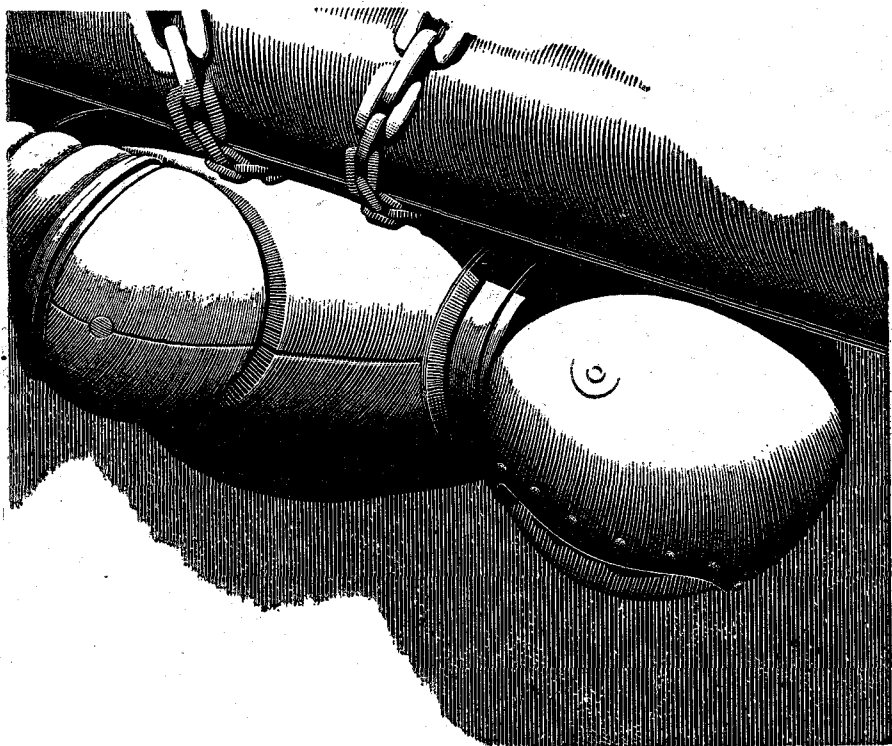
"This appears to be the stuff—it's almost completely unknown on Sarr, because of its low molecular weight—most of it must have escaped from the atmosphere eons ago, if it ever was present. According to this handbook, it should be liquid through quite a temperature range, but that's under our atmospheric pressure. It's quite reasonable that it should sublime the way it did in this vacuum."

"But what is it?"

"One of the oxides of hydrogen— H_2O , apparently. If it proves to be essential for the form of growth you're interested in, we're going to have a very interesting time handling it."

"We have cargo shells that can be kept at outside conditions, and towed outside the ship," Draï pointed out.

"I assumed you did," replied Ken. "However, normal 'outside' conditions in the space near Planet One would almost certainly cause this stuff to volatilize just as it did from the comparatively faint heat radiating from my armor. Your shells will have to be sealed airtight, and you will as I said, have an interesting time transferring



their contents to any cave we may pick."

Laj Draï looked startled for several seconds. Then he appeared to remember something, and his expression changed to one of satisfaction.

"Well," he said, "I'm sure you'll be able to figure that one out. That's what scientists are for, aren't they?"

It was Ken's turn to look startled, though he had known Draï long enough by this time to have expected something of this sort.

"Don't you ever solve your own

problems?" he asked, a trifle sourly.

Draï nodded slowly. "Yes, sometimes. I like to think them over for quite a while, though, and if they're scientific ones I don't have the knowledge to think with. That's why I hire people like you and Feth. Thanks for reminding me—I do have a problem at the moment, on which I have spent a good deal of thought. If you'll excuse me, I'll attend to the finishing touches. You can stay here and work on this one."

"There's nothing more we can do on this planet for the present."

"That I can believe. We'll head back for Planet One and the rest of your laboratory facilities. Come on, Lee—we'll leave the scientist to his science."

Ken, unsuspicious by nature, did not even look up as the two left his room. He had just found ammonia on the list, and was wondering whether his measurement could have been far enough off to permit the true molecular weight to be only seventeen. Melting-point data finally reassured him. For safety's sake, however, he went through all the hydrogen, lithium, beryllium, boron, nitrogen, and oxygen compounds that were listed in the handbook. The faint disturbance incident to the vessel's take-off did not bother him at all. The silent opening of his door made no impression on him, either.

In fact, the door had closed again with a crisp snap before anything outside the printed pages registered on his consciousness. Then a voice, coincident with the closing door, suddenly shattered the silence.

"Sallman Ken!" The mechanical speaker over the entrance boomed the words; the voice was that of Laj Drai. "I said when we parted a moment ago that I occasionally solve my own problems. Unfortunately, you have come to represent a problem. There seems to be only one solution which will not destroy your usefulness. In a way I regret to employ it, but you have really only your own unwarranted curiosity to thank. When you wake up, we will

talk again—you can tell me what you think of our commercial product!" The voice ceased, with a click which indicated that the microphone had been switched off.

Ken, fully aroused, had dropped the book and risen to his feet—or rather, left his rack and floated away from the floor, since they were in weightless flight. His eyes roved rapidly to all quarters of the room in search of something that might furnish meaning to Drai's rather ominous words. Several seconds passed before he saw it—a rectangular yellow brick, floating in the air near the door. For a moment he did not recognize it, and pushed against a wall to bring himself nearer to it; then, as he felt the chill emanating from the thing, he tried futilely to check his drift.

Already the brick was losing shape, its corners rounding with the heat and puffing off into vapor. It was frozen sulfur—harmless enough if contact were avoided, but terrifying when considered with his background of knowledge and suspicion. With a frantic flailing of his tentacles, he managed to set up enough of an air current to cause the thing to drift out of his path; but an equally anxious look about the room for something which might serve as a gas mask disclosed nothing.

He found himself unable to take his eyes from the dwindling object, now a rather elongated ellipsoid. It continued to shrink remorselessly, and suddenly there was something

else visible in the yellow—the end of a small white cylinder. As the last of the protective box vanished, this began to turn brown and then black over its entire surface, and a spherical cloud of smoke enveloped it. For an instant a wild hope flashed in Ken's mind; the thing had to burn, and a fire will not maintain itself in weightless flight. It requires a forced draft. Perhaps this one would smother itself out—but the cloud of smoke continued to swell. Apparently the thing had been impregnated with chips of frozen air in anticipation of this situation.

Now the edges of the smoke cloud were becoming fuzzy and ill-defined as diffusion carried its particles through the room. Ken caught the first traces of a sweetish odor, and tried to hold his breath; but he was too late. The determination to make the effort was his last coherent thought.

XII.

"So they decided to keep you." There might or might not have been a faint trace of sympathy in Feth Allmer's tone. "I'm not very surprised. When Draï raised a dust storm with me for telling you how far away Sarr was, I knew you must have been doing some probing on your own. What are you, Commerce or Narcotics?" Ken made no answer.

He was not feeling much like talking, as a matter of fact. He could remember just enough of his drug-induced slumber to realize things

about himself which no conscientious being should be forced to consider. He had dreamed he was enjoying sights and pleasures whose recollection now gave him only disgust—and yet under the disgust was the hideous feeling that there had been pleasure, and there might be pleasure again. There is no real possibility of describing the sensations of a drug addict, either while he is under the influence of his narcotic or during the deadly craving just before the substance becomes a physical necessity; but at this moment, less than an hour after he had emerged from its influence, there may be some chance of his frame of mind being understandable. Feth certainly understood, but apparently chose not to dwell on that point.

"It doesn't matter now which you were, or whether the whole gang knows it," he went on after waiting in vain for Ken's answer. "It won't worry anyone. They know you're ours for good, regardless of what you may think at the moment. Wait until the craving comes on—you'll see."

"How long will that be?" The point was of sufficient interest to Ken to overcome his lethargy.

"Five to six days; it varies a little with the subject. Let me warn you now—don't cross Laj Draï, ever. He really has the ship. If he keeps the tofacco from you for even half an hour after the craving comes on, you'll never forget it. I still haven't got over his believing that I told you

where we were." Again surprise caused Ken to speak.

"You? Are you—?"

"A sniffer? Yes. They got me years ago, just like you, when I began to get an idea of what this was all about. I didn't know where this system was, but my job required me to get engineering supplies occasionally, and they didn't want me talking."

"That was why you didn't speak to me outside the observatory, just after we got back from the caves?"

"You saw me come out of the office? I never knew you were there. Yes, that was the reason, all right."

Feth's normally dour features grew even grimmer at the memory. Ken went back to his own gloomy thought, which gradually crystallized into a resolve. He hesitated for a time before deciding to mention it aloud, but was unable to see what harm could result.

"Maybe you can't get out from under this stuff—I don't know; but I'll certainly try."

"Of course you will. So did I."

"Well, even if I can't Drai needn't think I'm going to help him mass produce this hellish stuff. He can keep me under his power, but he can't compel me to think."

"He could, if he knew you weren't. Remember what I told you—not a single open act of rebellion is worth the effort. I don't know that he actually enjoys holding out on a sniffer, but he certainly never hesitates if he thinks there's need—and you're guilty until proved inno-

cent. If I were you, I'd go right on developing those caves."

"Maybe you would. At least, I'll see to it that the caves never do him any good."

Feth was silent for a moment. If he felt any anger at the implication in Ken's statement, his voice did not betray it, however.

"That, of course, is the way to do it. I am rather surprised that you have attached no importance to the fact that Drai has made no progress exploring Planet Three for the seventeen years I have been with him."

For nearly a minute Ken stared at the mechanic, while his mental picture of the older being underwent a gradual but complete readjustment.

"No," he said at last, "I never thought of that at all. I should have, too—I did think that some of the obstacles to investigation of the planet seemed rather odd. You mean you engineered the television tube failures, and all such things?"

"The tubes, yes. That was easy enough—just make sure there were strains in the glass before the torpedo took off."

"But you weren't here when the original torpedoes were lost, were you?"

"No, that was natural enough. The radar impulses we pick up are real, too; I don't know whether this idea of a hostile race living on the blue plains of Planet Three is true or not, but there seems to be some

justification for the theory. I've been tempted once or twice to put the wrong thickness of antiradar coating on a torpedo so that they'd know we were getting in—but then I remember that that might stop the supply of tofacco entirely. Wait a few days before you think too hardly of me for that." Ken nodded slowly in understanding, then looked up suddenly as another idea struck him.

"Say, then the failure of that suit we sent to Three was not natural?"

"I'm afraid not." Feth smiled a trifle. "I overtightened the packing seals at knees, hips and handler joints while you were looking on. They contracted enough to let air out, I imagine—I haven't seen the suit, remember. I didn't want you walking around on that planet—you could do too much for this gang in an awfully short time, I imagine."

"But surely that doesn't matter now? Can't we find an excuse for repeating the test?"

"Why? I thought you weren't going to help."

"I'm not, but there's an awfully big step between getting a firsthand look at the planet and taking living specimens of tofacco away from it. If you sent a person to make one landing on Sarr, what would be the chance of his landing within sight of a *Gree* bush? Or, if he did, of your finding it out against his wish?"

"The first point isn't so good; this tofacco might be all over the place

like *Mekko*—the difficulty would be to miss a patch of it. Your second consideration, however, now has weight." He really smiled, for the first time since Ken had known him. "I see you are a scientist after all. No narcotics agent would care in the least about the planet, under the circumstances. Well, I expect the experiment can be repeated more successfully, though I wouldn't make the dive myself for anything I can think of."

"I'll bet you would—for one thing," Ken replied. Feth's smile disappeared.

"Yes—just one," he agreed soberly. "But I see no chance of that. It would take a competent medical research years, even on Sarr with all his facilities. What hope would we have here?"

"I don't know, but neither of us is senile," retorted Ken. "It'll be a few years yet before I give up hope. Let's look at that suit you fixed, and the one I wore on Four. They may tell us something of what we'll have to guard against." This was the first Feth had heard of the sortie on Mars, and he said so. Ken told of his experience in detail, while the mechanic listened carefully.

"In other words," he said at the end of the tale, "there was no trouble until you actually touched this stuff you have decided was hydrogen oxide. That means it's either a terrifically good conductor, has an enormous specific heat, a large heat of vaporization, or two or three of those in combination. Right?" Ken

admitted, with some surprise, that that was right. He had not summed up the matter so concisely in his own mind. Feth went on; "There is at the moment no way of telling whether there is much of that stuff on Three, but the chances are there is at least some. It follows that the principal danger on that planet seems to be encountering deposits of this chemical. I am quite certain that I can insulate a suit so that you will not suffer excessive heat loss by conduction or convection in atmospheric gases, whatever they are."

Ken did not voice his growing suspicion that Feth had been more than a mechanic in his time. He kept to the vein of the conversation.

"That seems right. I've seen the stuff, and it's certainly easy to recognize, so there should be no difficulty in avoiding it."

"You've seen the solid form, which sublimed in a near vacuum. Three has a respectable atmospheric pressure, and there may be a liquid phase of the compound. If you see any pools of any sort of liquid whatever, I would advise keeping clear of them."

"Sound enough—only, if the planet is anything like Sarr, there isn't a chance in a thousand of landing near open liquid."

"Our troubles seem to spring mostly from the fact that this planet *isn't* anything like Sarr," Feth pointed out dryly. Ken was forced to admit the justice of this statement, and stored away the rapidly

growing stock of information about his companion. Enough of Feth's former reserve had disappeared to make him seem a completely changed person.

The suits were brought into the shop and gone over with extreme care. The one used on Planet Four appeared to have suffered no damage, and they spent most of the time on the other. The examination this time was much more minute than the one Ken had given it on board the *Karella*, and one or two discoveries resulted. Beside the bluish deposit Ken had noted on the metal, which he was now able to show contained oxides, there was a looser encrustation in several more protected spots which gave a definite potassium spectrum—one of the few that Ken could readily recognize—and also a distinct odor of carbon bisulfide when heated. That, to the chemist, was completely inexplicable. He was familiar with gaseous compounds of both elements, but was utterly unable to imagine how there could have been precipitated from them anything capable of remaining solid at "normal" temperature.

Naturally, he was unfamiliar with the make-up of earthly plants, and had not seen the fire whose remains had so puzzled Roger Wing. Even the best imaginations have their limits when data are lacking.

The joints had, as Feth expected, shrunk at the seals, and traces of oxides could be found in the insulation. Apparently some native

atmosphere had got into the suit, either by diffusion or by outside pressure after the sulfur had frozen.

"Do you think that is likely to happen with the packing properly tightened?" Ken asked, when this point had been checked.

"Not unless the internal heaters fail from some other cause, and in that case you won't care anyway. The overtightening cut down the fluid circulation in the temperature equalizing shell, so that at first severe local cooling could take place without causing a sufficiently rapid reaction in the main heaters. The local coils weren't up to the job, and once the fluid had frozen at the joints of course the rest was only a matter of seconds. I suppose we might use something with a lower freezing point than zinc as an equalizing fluid—potassium or sodium would be best from that point of view, but they're nasty liquids to handle from chemical considerations. Tin or bismuth are all right that way, but their specific heats are much lower than that of zinc. I suspect the best compromise would be selenium."

"I see you've spent a good deal of time thinking this out. What would be wrong with a low specific heat liquid?"

"It would have to be circulated much faster, and I don't know whether the pumps would handle it—both those metals are a good deal denser than zinc, too. Selenium is

still pretty bad in specific heat, but its lower density will help the pumps. The only trouble is getting it. Well, it was just a thought—the zinc should stay liquid if nothing special goes wrong. We can try it on the next test, anyway."

"Have you thought about how you are going to justify this next trial, when Draai asks how come?"

"Not in detail. He won't ask. He likes to boast that he doesn't know any science—then he gloats about hiring brains when he needs them. We'll simply say that we have found a way around the cause of the first failure—which is certainly true enough."

"Could we sneak a televisior down on the next test, so we could see what goes on?"

"I don't see how we could conceal it—any signal we can receive down here can be picked up as well or better in the observatory. I suppose we might say that you had an idea in that line too, and we were testing it out."

"We could—only perhaps it would be better to separate ideas a little. It wouldn't help if Draai began to think you were a fool. People too often connect fools and knaves in figures of speech, and it would be a pity to have him thinking along those lines."

"Thanks—I was hoping you'd keep that point in mind. It doesn't matter much anyway—I don't see why we can't take the *Karella* out near Three and make the tests from there. That would take only a mat-

ter of minutes, and you could make the dive right away if things went well. I know it will be several days before the ship will be wanted—more likely several weeks. They get eight or ten loads of tofacco from the planet during the 'season' and several days elapse between each load. Since all the trading is done by torpedo, Lee has a nice idle time of it."

"That will be better. I still don't much like free fall, but a few hours of that will certainly be better than days of waiting. Go ahead and put it up to Draï. One other thing—let's bring more than one suit this time. I was a little worried for a while, there, out on Four."

"A good point. I'll check three suits, and then call Draï." Conversation lapsed, and for the next few hours a remarkable amount of constructive work was accomplished. The three units of armor received an honest preservice check this time, and Feth was no slacker. Pumps, valves, tanks, joints, heating coils—everything was tested, separately and in all combinations.

"A real outfit would spray them with liquid mercury as a final trick," Feth said as he stepped back from the last suit, "but we don't have it, and we don't have any place to try it, and it wouldn't check as cold as these are going to have to take anyway. I'll see what Draï has to say about using the ship—we certainly can't run three torpedoes at once, and I'd like to be sure all these suits are serviceable before any one of them is worn on Three." He was

putting away his tools as he spoke. That accomplished, he half turned toward the communicator, then appeared to think better of it.

"I'll talk to him in person. Draï's a funny chap," he said, and left the shop.

He was back in a very few minutes, grinning.

"We can go," he said. "He was very particular about the plural. You haven't been through a period of tofacco-need yet, and he is afraid you'd get funny ideas alone. He is sure that I'll have you back here in time for my next dose. He didn't say all this, you understand, but it wasn't hard to tell what he had in mind."

"Couldn't we smuggle enough tofacco aboard to get us back to Sarr?"

"Speaking for myself, I couldn't get there. I understand you don't know the direction yourself. Furthermore, if Draï himself can't smuggle the stuff onto Sarr, how do you expect me to get it past his eyes? I can't carry a refrigerator on my back, and you know what happens if the stuff warms up."

"All right—we'll play the game as it's dealt for a while. Let's go."

Half an hour later, the *Karella* headed out into the icy dark. At about the same time, Roger Wing began to feel cold himself, and decided to give up the watch for that night. He was beginning to feel a little discouraged, and as he crawled through his bedroom window a short time later—with elaborate

precautions of silence—and stowed the rope under his bed, he was wondering seriously if he should continue the vigil. Perhaps the strange visitor would never return, and the longer he waited to get his father's opinion, the harder it would be to show any concrete evidence of what had happened.

He fell asleep over the problem—somewhere about the time the test torpedo entered atmosphere a few miles above him.

XIII.

The *Karella* hung poised deep in Earth's shadow, well beyond measurable air pressure. The spherical compass tuned to the transmitter on the planet far below pointed in a direction that would have been straight down had there been any weight. Ordon Lee was reading, with an occasional glance at his beloved indicator board whenever a light blinked. This was fairly often, for Ken and Feth had put the testing of cold-armor on a mass-production basis. One of the suits had already returned and been checked; Feth was now in the open air lock, clad in an ordinary spacesuit, detaching the second from the cargo rings and putting the third in its place. He was in touch with Ken, at the torpedo controls, by radio. The scientist was holding the torpedo as well as he could partly inside the lock, which had not been designed for such maneuvers and was not large enough for the full

length of the projectile. Feth was having his troubles from the same fact, and the lock-obstruction light on Lee's board was flashing hysterically.

With the torpedo once more plunging toward the dark surface below, things quieted down a little—but only a little. Feth brought the second suit inside, necessarily closing the outer door in the process and occasioning another pattern of colored light to disturb the pilot's reading. Then there was nothing but the fading proximity light as the torpedo receded, and the burden of divided attention was shifted to Ken. He had to stay at his controls, but he wanted desperately to see what Feth was doing. He already knew that the first of the suits was wearable—its interior temperature had dropped about forty degrees, which represented an actual heat loss his own metabolism could easily make up; and there was a governor on the heater unit which Feth had deliberately set down so that the heat loss should be measurable. With that limitation removed, he should be as comfortable on the Planet of Ice as anyone could expect to be while incased in nearly three hundred pounds of metal.

Knowing this, he was less worried about the second suit; but he found that he was still unable to concentrate completely on the job in hand. He was quite startled when a buzzer sounded on his own board, which proved to be announcing the fact that his torpedo had encoun-

tered outside pressure. As Ken had not reduced its speed to anything like a safe value, he was quite busy for a while; and when he had finally landed the messenger—safely, he hoped—Feth finished his work. There were now two usable suits.

That removed the greatest load from the minds of both scientist and mechanic, and they were not too disappointed when the third unit failed its test. Ken had a suspicion of the reason—Feth found that leakage had occurred at leg and “sleeve” joints, which would have been put under considerable stress by high acceleration. He did not volunteer this idea, and Feth asked no questions. Ken had an uneasy idea that the mechanic with the rather surprising chemical and physical background might have figured the matter out for himself, however.

This worry, if it could be dignified by such a name, was quickly submerged in the flurry of final preparations for the descent. Ordon Lee still refused flatly to lower his ship into the heat-trap of Earth's atmosphere, even after the success of two of the suits; it would therefore be necessary for Ken to ride down as the empty armor had done—clamped to the outside of a torpedo. The attachments would have to be modified so that he could manipulate them himself, and that took a little time. Ken ate a good meal, and took the unusual precaution of drinking—the Sarrians manufactured nearly all the liquid they



needed in their own tissues.

If the scientist felt any slight doubts as he stepped into the metallic bulk which was to be his only shield for the next few hours from the ghastliest environment he could imagine, his pride prevented them from showing. He was silent as Feth carefully dogged the upper section in place—entry was effected through the top—and listened with a tiny stethoscope to each of the equalizer pumps as they were turned on. Satisfied, he nodded approval at the armored scientist, and Ken reached out, seized a stanchion with one of his handlers, and pulled his personal tank into motion toward the air lock. He had to wait in the corridor while Feth redonned his own suit, and then patiently inside the lock while the mechanic carefully attached the armor to the hull of the torpedo. Lee had finally become helpful, and was holding the projectile inside the lock against the pull of the meteor repellers, which he still refused to turn off for an instant.

Even when the outer door closed between Ken and the rest of the livable space within several million miles, he managed to keep his self-control. He was now used to weightlessness, fortunately; the endless-fall sensation has serious mental effects on some people. Even the relative emptiness of the surrounding space he could stand, since he could see enough objects to keep himself oriented. There were about

as many stars visible here as near his home planet, since two hundred parsecs means little in the size of the galaxy.

In fact, he retained his calm until his eyes as well as his sense of balance agreed to tell him he was falling. The *Karella* had long since vanished behind—or above—him. The sun was in almost the same direction, since there had been no discussion needed to settle that the landing should be made on the day side of the planet. Rather more had been needed before the same old landing place had been selected—Ken, of course, wanted to see the natives, but even his scientific curiosity had been tempered with caution. Feth, regarding the trip chiefly as another test of the armor, had been rather against natives as an added complication; but curiosity had won out. Ken was falling toward the homing transmitter at which the trading was done, with the understanding that he would be carried a little to the west, as before—he was willing to meet “his” native, but did not want to interfere more than necessary with trade. He realized, of course, that the creatures probably moved around, but he resolutely declined to think about the probable results if the one he had frightened had met the traders; he regarded it as profitless guesswork, which it certainly would have been.

The result of all the discussion, however, meant that he could see clearly the expanding world below—

it felt like below, since Feth was now slowing the torpedo's descent. He could not see the torpedo at all easily, as his armor was facing away from it and the back view ports in the helmet were too close to the hull for real vision. He was beginning to feel, therefore, like a man hanging from the ledge of a high roof on a rope of questionable strength. If his vocal apparatus had been as closely connected with his breathing mechanism as is that of a human being, his state of mind would certainly have been betrayed by the radio to the listeners above. As it was they could not hear his tense breathing, and he endured his terror in silence and alone. It was probably just as well; Ordon Lee's reaction would hardly have been a sympathetic one, and whatever helpful feeling Feth might have had he would not have been likely to express aloud.

There was air around him now—at least the gaseous mixture this world used for air. It was whistling upward, audible even through the armor. He could not be much more than five miles from the ground, and the descent was still rapid—too rapid, he was beginning to feel. As if in answer to the thought, his weight increased abruptly, and he knew that Feth far above had added power. With an effort greater than he had thought himself capable of making, Ken wrenched his attention from the rapid expansion of the landscape below and the creaking of the taut chains above, and concen-

trated on details. Once started, this proved easy, for there was more that was fantastic around him than mere temperature.

He could not see too far, of course. Eyes whose greatest sensitivity lies in the blue and near ultraviolet area are at a considerable disadvantage in Earth's hazy atmosphere. Still, the ground below was taking on detail.

It was rough, as they had deduced. Even though mountains do not show to best advantage from overhead, Ken was experienced enough to judge that these were quite respectable heights by Sarrian standards. The surface was buried in a riot of color, largely varying shades of green, brown, and gray. Here and there a patch of metallic sheen reminded him disquietingly of the vast, smooth areas where the mysteriously hostile intelligences of the planet dwelt. If these were outposts—but they had never interfered with the trading torpedoes which had been descending for years in this same area. Ken told himself.

As he dropped lower, he saw that some of the gray elevations were of remarkable shape and form—many of them were actually broader above than lower down. He was quite low before he could see that these objects were not part of the landscape, but were actually suspended in the air. The only clouds he had ever seen were the vast dust storms raised by Sarr's furious winds, but

he judged that these must be of somewhat similar nature. Probably the particles were smaller, to permit them to remain in suspension—a planet this cold could hardly have very strong winds. He described the phenomenon as minutely as he could to the listeners above. Feth reported that he was putting Ken's broadcasts on record, and added some more pertinent information.

"Your descent has been almost stopped, now. You are about one mile above the transmitter, and a few hundred feet higher above the place where the atmosphere tests were made. Do you want to go straight down now, or stay there and observe for a while?"

"Down with moderate speed, please. It is not possible to see too far, and I'd like to get down to where real details are visible. It seems to be mountainous country—I'll try to guide you in landing me near some peak, so that I can observe for a reasonable distance from a stable spot."

"All right. You're going down." Two or three minutes passed silently; then Ken spoke again.

"Are you moving me horizontally?"

"No. You are already away from over the transmitter—three or four miles."

"Then this atmosphere has stronger currents than I expected. I am drifting visibly, though not rapidly. It's rather hard to specify the direction—the sun is not very far from straight up, and the torpedo

hides it."

"When you're nearly down, give me the direction with respect to the torpedo's orientation. I'll stop you before you touch."

Gradually details grew clearer. The greenness seemed to be a tangled mass of material somewhat resembling chemical growths Ken had prepared in various solutions; he tentatively identified it as plant life, and began to suspect what had caused the crackling sounds when the test torpedo had been landed.

Standing out from the green were areas quite obviously of bare rock. These seemed to be located for the most part at and near the tops of the mountains; and with infinite care Ken directed his distant pilot in an approach to one of these. Finally, hanging motionless twenty feet above a surface which even in this relatively dim light was recognizable as rock, he gave the order to lower away.

Six feet from the ground, he had the machine stopped again, and carefully released the leg chains. The lower part of his armor dropped, almost touching; a word into the microphone brought the metal feet into contact with the ground. Releasing one of the upper chains caused him to swing around, still leaning at a sharp angle with one side up toward the supporting hull. By a species of contortionism he contrived to make a workable tripod of his legs and the rear prop of the armor, and at last released

the final chain. He was standing on the Planet of Ice, on his own two feet.

He felt heavy, but not unbearably so. His extreme caution not to land in a recumbent position was probably well founded—it was very unlikely that he could have raised himself and the armor to a standing posture with his own muscles in this gravity. Walking was going to be difficult, too—possibly even dangerous; the rock was far from level.

This, of course, was not the principal matter. For several minutes after he had severed connections with the torpedo, Ken made no attempt to move; he simply stood where he was, listening to the almost inaudible hum of his circulation motors and wondering when his feet would start to freeze. Nothing seemed to happen, however, and presently he began to take a few cautious steps. The joints of his armor were still movable; evidently the zinc had not yet frozen.

The torpedo had drifted away from overhead; apparently a slight wind was blowing. At Ken's advice, Feth brought the machine to the ground. Even with his fear lost in curiosity, Ken had no intention of becoming separated by any great distance from his transportation. Once assured that it was remaining in place, he set to work.

A few minutes' search located several loose rock fragments. These he picked up and placed in the torpedo, since anything might be of some interest; but he principally

wanted soil—soil in which things were visibly growing. Several times he examined rock specimens as closely as he could, hoping to find something that might resemble the minute plants of Planet Four; but he failed utterly to recognize as life the gray and black crustose lichens which were actually growing on some of the fragments.

The landscape was not barren, however. Starting a few hundred yards from his point of landing, and appearing with ever increasing frequency as one proceeded down the mountainside, there were bushes and patches of moss which gradually gave way to dwarfed trees and finally, where the rock disappeared for good beneath the soil, to full grown firs. Ken saw this, and promptly headed for the nearest clump of bushes. As an afterthought, he told Feth what he was doing, so that the torpedo could be sent along. There was no point, he told himself, in carrying all the specimens back up the hillside.

Progress was quite difficult, since a gap a foot wide between rocks presented a major obstacle to the armor. After a few minutes of shuffling punctuated with frequent pauses for rest, he remarked:

"The next time, we'd better have longer shoulder chains. Then I can hang right side up from the torpedo, and be spared all this waddling."

"That's a thought," replied Feth.

Ken lifted his prop from the ground and shuffled forward once

more. Another minute or two sufficed to bring him within reach of the strange growth. It was only about a foot high, and he was even less able to bend down to it than he had been on Planet Four; so he extended a handler to seize a branch. The results were a trifle startling.

The branch came away easily enough. There was no trouble about that. However, before he had time to raise it to his eyes a puff of smoke spurted from the point where the handler was touching it, and the tissue in the immediate neighborhood of the metal began to turn black. The memories aroused by this phenomenon caused Ken to drop the branch, and he would undoubtedly have taken a step backward had the armor been less cumbersome. As it was, he remembered almost instantly that no gas could penetrate his metal defenses, and once more picked up the bit of vegetation.

The smoke reappeared and grew thicker as he lifted it toward his face port, but he had several seconds to examine its structure before the smoldering wood burst into flame. Although this startled him almost as much as the earlier phenomenon had, he retained his hold on the fragment. He watched with interest as the main branch curled, blackened, glowed, and flamed away, the drier leaves following suit while the green ones merely browned slightly. He made an effort to capture some of the traces of ash that remained when the process was

completed, but all he was able to save were some bits of charcoal from the less completely burned portions.

A bit of soil, scraped up from beneath the plant, smoked but did not burn. Ken obtained a number of air-tight cans from the cargo compartment of the torpedo and spent some time scooping bits of soil up in these. He also compressed some of the air into a cylinder, using a small piston-type pump from which Feth had carefully removed all traces of lubricant. It leaked a trifle, but its moving parts moved, which was a pleasant surprise.

"There," said Ken, when the task was completed. "If there are any seeds in that earth, we should be able to build a little vivarium and find out at least something about this life and its needs."

"Do you have a balance between makers and eaters?" asked Feth. "Suppose these plants are all . . . what would you call them—oxidizers? . . . and you don't have the corresponding reducers. I should think you'd need a balance of some sort, with any sort of life—otherwise you'd have perpetual motion."

"I can't tell that, of course, until we try. Still, I might go down this mountain a little farther and try to pick up a wider variety. There are still some empty cans."

"Another point—I don't recall your making any arrangement to keep them at the proper temperature."

"We'll leave the cans in the torpedo until we get back to One. With no air, they'll change temperature very slowly, and we can leave the torpedo somewhere on the twilight zone of One where it'll stay about the right temperature until we can build a chamber with thermostats and a refrigerator—it won't be very large; I have only a couple of cubic yards of air."

"All right, I guess you win. Have you seen any animal life? I've heard the old buzzing once or twice."

"Have you? I hadn't noticed it."

"I'll call you if I hear it again."

He fell silent, and Ken resumed his laborious journey downhill.

With frequent rests, Ken finally succeeded in filling and sealing all his containers and depositing them in the cargo space of the torpedo. He was interrupted once by Feth, who reported that the buzzing was again audible; but even though Ken himself could hear it when he listened, he was unable to find the source. Flies are not very large creatures, and the light was very dim anyway by Sarrian standards. Since there was nothing very appetizing even for a fly in the cargo compartment above which the microphone was located, the buzzing presently ceased.

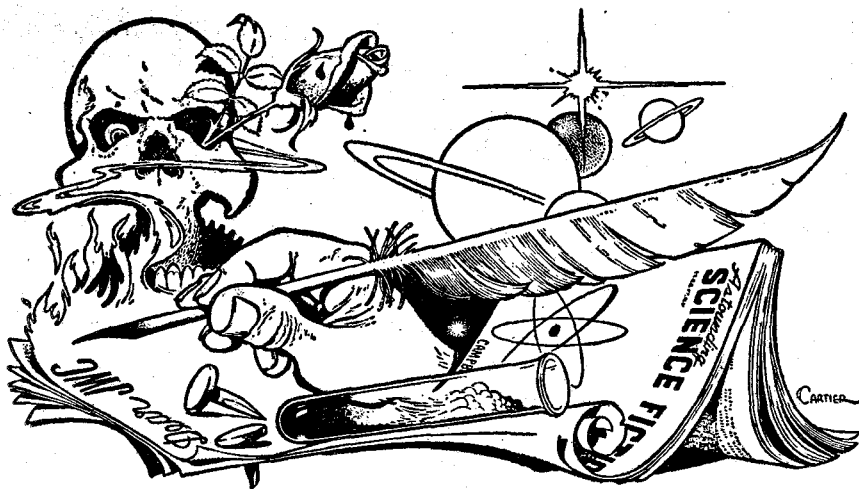
Ken took a final look at the landscape, describing everything as completely as he could so that the record being made far above would be useful. The peaks stood out far more prominently now, since some of them were higher than he was. By

ignoring the vegetation with which their slopes were clothed and imagining that it was sunset just after a particularly good dust storm, he was even able to find something almost homelike in the scene—there were times when even Sarr's blue-white sun could look as dull as the luminary of this icy world. At such times, of course, there was always a wind which would put Earth's wildest hurricane to shame, and the silence around him was out of place on that score; but for just a moment his imagination was able to carry him across two hundred parsecs of emptiness to a world of warmth and life.

He came to himself with a little start. This place was nothing like home—it wasn't exactly dead, but it should be; dead as the vacuum of space it so greatly resembled. Its cold was beginning to creep into him, mentally in the form of a return of the horror he had felt the first time he had seen the planet and physically by a slight ache in his feet. Even the engineering miracle he was wearing could not keep out the fingers of the cold indefinitely. He started to call Feth, to have the torpedo lifted so that he could get at the chains and clamps; but the request was not uttered.

As suddenly as it had done a few days before, a human voice cut sharply through the stillness of the Planet of Ice.

(To Be Concluded)



BRASS TACKS

Dear Mr. Campbell:

I have a bone to pick with author Fyfe regarding the decision of Galactic Co-ordinator Crayn in "Key Decision" to surrender his command to Gax Ladauk merely because the aforesaid Gax presumably knew far more than Crayn about the specific combat sector in the galactic war developing in that story than Crayn did. This was a most illogical decision—highly unrealistic in fact, in terms of the character Mr. Fyfe had carefully built up in Crayn in his preceding pages.

There was no need at all for Crayn to give up his command. The intimate knowledge Gax possessed made him an invaluable asset to Crayn in waging the war, un-

doubtedly, and he should have been immediately installed as Assistant Chief of Staff, G-3, Operations, or perhaps Chief of Staff. He could then have devoted all his talents toward winning the war just as Crayn wanted him to do—and Crayn would also have been around, as Gax's immediate superior, to lend *his* assistance to the achievement of the victory, also.

What's a Commanding General's staff for, anyhow, but to advise him on situations exactly parallel to those Crayn was encountering? Would Mr. Fyfe have us believe that the Commandant of an Army—the Leader of a people—must know more about the specific details of an enemy country and people

than any of his subordinates? The specialist was needed, yes, but not necessarily in *command*.

The decision of Crayn to surrender his command was completely out of character—it marked him as too weak ever to have risen to the heights he had attained in a century of military and diplomatic service. The very first thing a man learns about leadership is probably the hardest—but I can't help but believe that Crayn had learned it, and learned it well, in a hundred years of serving the Galaxy—and that is that responsibility cannot be shunned by the true leader. No man unwilling to face up to the obligations of his responsibilities could have become Galactic Co-ordinator. Sorry, Mr. Fyfe—we just don't believe you!

The May issue was outstanding for its good stories. Meyer's "Guess Again" was my favorite, followed by the horrifying "Izzard" and "Galactic Gadgeteers" in that order. "Success Story" and "Key Decision" tie for fourth place honors.

Keep up the good work—please give us more Harry Stine.— J. M. Patrick, 2395 Gladys Street, Beaumont, Texas.

I rather agree with the logic of Patrick's point. Usually an expert functions best when freed of responsibility in irrelevant matters, so Crayn could best serve by relieving Gax of other problems. BUT—Fyfe, then, wouldn't have had the fine story he did!

Dear Mr. Campbell:

Apropos of Mr. de Camp's article "Care and Feeding Of Mad Scientists"—June: Mr. de Camp, himself a scientist, has been guilty of a lot of broad statements in your publication heretofore—but it is doubtful if he has made any so blatantly unsupportable as he has in this article.

1. Scientists are "all people of high intelligence . . . one has to be up in the top four or five percentile (!) of the whole population . . . even a more rarefied stratum." This is not only dubious it is downright untrue. It is of the essence of that propaganda streak of the customary scientist trying to justify his own existence. Intelligence, according to Webster, the capacity for knowledge or understanding, especially in relation to novel situations—there are other addenda to this, but it is the broadest and must serve. This hardly fits the scientist at all. In the first place, nearly all scientists of any note *must* go to college—which means that their family in almost all cases must have circumstances comfortable enough to allocate around six thousand a year minimum for six to ten years to it. This automatically eliminates nearly seventy-five per cent of this country's population. Then he goes through a routine which is devoted largely to memorization rather than genuine creative training; he learns to specialize until he has almost lost sight of his fellow-creatures—and then he is called "highly intelligent" by his

own kind such as de Camp!

This is the keynote of the article and on it the whole thesis stands or falls. But another can be added: "Being more intelligent than average, scientists perhaps tend to be more reasonable, rational, and judicious than other people." Now, son! That is the finest non sequitur—even including the cautious "perhaps"—in recent publishing history. It is, again, simply not true. Try a scientist, any scientist—any time.

Perhaps—to duck in behind de Camp's example—it would be much more accurate to say that the chief distinguishing characteristic of a scientist is in essence the popular one: mad. The people have a good deal of common sense; the popular verdict here is near the actuality. As recent world events have proved, scientists are by and large men with means and no end—possibly the most dangerous breed of ethics that it is possible to evolve. They are men with a necessary rigidity of mind; with a specialization which renders them often blind to the consequences of their action; with a fanatical adherence to their faith of science—as de Camp points out—which makes them easy prey for the Hitlers and Stalins; men whose attitude is revealed when they call theories "laws" and whose creed is no less rigid and unforgiving than that of an obsessionist. They are men who have—unconsciously perhaps—created a pseudo-aristocracy based on their self-imposed tyranny. They have all the power and no idea of the

goal—a mania which is unequaled, a situation which is unparalleled in history. There are exceptions like Einstein—but these are very far from the rule and Einstein would hesitate even to classify himself as a "scientist." Basic efficiency, which must always be to some degree the antithesis of erratic, human, failing man—that is the god of the scientist as delineated by de Camp.

To say that the scientist is intelligent is incorrect; perhaps it is closer to the mark to say that he is inhuman—that he has made and is making himself into the image of the god he desires so madly—the small god of "truth"—rather than the god of wisdom and ethos.

Forgive me if this seems unwarranted in the nature of the personal features of scientists. They include some of the most meek and merciful and ethical and naive personages of our century—but they are as rigid as steel and as raging as a lion in their field—and as unmerciful as an animal. It sounds like a queer transformation—but it is unhappily true.

This is undoubtedly the scientific age. The whole emphasis of our time is and must be on science. Yet still the practice is not toward the "whole man" it is toward the divided, the specialized, the mutually exclusive man in science. Never has power been in the hands of so few before; never has it been so ignored and created at the same moment. This is not virtue; this is immortality of the blackest and most damning sort. Some of the less

insensitive among the scientists already feel the weight to their terrible amorality—among them Oppenheimer and Weiner.

But to produce such a callous article—such a self-defensive article—and such a fundamentally untrue article by de Camp—is, of course, an unforgivable item in any man's category. Though not perhaps in the category of a "true scientist."—Richard Hubler, 2002 Malcolm Avenue, Los Angeles 25, California.

I think Mr. Hubler will shortly hear at length from a few "raging lions in the field." Sir, in this company, your neck is extended!

Dear Mr. Campbell:

This seems to be the first letter I have written for Brass Tacks, although you have heard from me previously for other reasons. Suffice it to say that I regard Astounding SCIENCE FICTION to be the TOP magazine in its field. I "nibble" between the covers of others at newsstands, but almost all of *their* stories belong to the "space-opera" and "bug-eyed-monster" type of teenage titillation. Only the stories of ASF are truly thought-provoking. Some of them are less interesting than others, but personal viewpoints play a large part there. The science articles are extremely interesting to me, because of my background of studies in several branches of science.

More to the immediate point is the fact—really a personal opinion—that some of the letter writers to Brass Tacks seem to resemble something once mentioned in the story, "Metamorphosite." In that story, a hypnotized policeman said, "There are fairies at the bottom of my garden!" I think some of your letter writers are like fairies—apparently nonexistent. I submit the following evidence: In the December, 1946, issue a man, claiming to be a psychologist named W. P. Key, at 9 Elm Street, Middletown, Vermont, wrote a lengthy letter. Recently I reread it, and decided to write to him. The letter came back marked: "No such postoffice in state named: Misdirected." The postmark is so faint I cannot read it. In the June, 1951, issue, a man, claiming to be a student of logic and epistemology, named John J. Tolbert, 1411 N. Bronson Street, Chicago 25, Illinois, wrote a lengthy letter. Recently I decided to write to him. The letter came back marked: "Cannot be found." I would be very happy if you would kindly publish this letter, since I am interested in corresponding with the writers of those two letters—regardless of their true names and addresses. *My correct name and address* are below. For your information, I am a computer—(IBM CPC)—man.

The most outstanding stories I remember from ASF are: "Slan," "Weapon Shops," the C. T. (contra-terrene matter) series, "Metamorphosite," "World of A," "Players

of $\bar{A}$," "... And Then There Were None," the "Wonder Children" series, "Genius," "Breeds There a Man ... ?," "Izzard And The Membrane" (the concept of *transors* was worth wading through what I regarded as largely "meller-drama"). I have tried working with *transors* a little in my spare time, since I read the story, but they are elusive things! Even breaking them down to the special case of one matrix relating two co-ordinate systems, there arise difficulties. Since the components are complex in number, therefore so are the number of axes related by the matrix! Of course, the manipulations of matrices and tensors can be extended, in some instances *I believe*, to include such things, although I have not attempted any rigorous proofs as yet. What interests me are possible geometrical interpretations, because these lend themselves readily to applications in physics and engineering. If a co-ordinate system has a complex number of axes, can we assume that there are *two sets* of independent axes, with numbers a and b of axes, denoted by the number $a + ib$? Can we further assume, by generalizing on the use of the "i" in ordinary complex space, that the *two sets* of axes lie in different regions of space, said regions being usually perpendicular to each other? It is *one* interesting interpretation of a matrix of a tensor, that the matrix relates *one pair of sets of co-ordinate axes to another pair of the same*! Or am I being illogical?

Keep your magazine on a high "plane" of thought, *please*, and try to eliminate any authors with tendencies to "opera," BEM, and bobby-soxers. They have their place, too, *but not in ASF!* Let teen-agers cut their teeth elsewhere, on other magazines as I did, then come to ASF for *mature reading*!—Clyde E. Corson, 2343-A, 34th Street, Santa Monica, California.

Maybe you need Izzard to work out those transors and find the missing co-ordinating readers.

Dear Mr. Campbell:

When a piece of soft iron is brought near the pole of a magnet, the effect of its field is to so affect the iron that it is attracted toward the magnet. The effect on the iron is to produce in it the condition which sets up a magnetic field of opposite polarity to that of the magnet. There are then two opposite fields interacting. The magnet and the iron move toward each other. In some manner the particles of iron, instead of moving at random within the mass, begin to move in a certain direction. Can this effect be produced by any other means?

What if you could have a magnet with only one pole? Would that mean that it would forever move, or tend to move through space?

The effect of a magnet is produced by its field. A field is propa-

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 EARTH.**



gated at the speed of light. If an electromagnetic pole of great strength is located in Missouri, and a piece of soft iron is located one hundred eighty-six thousand miles away, it will take one second for the field of the electromagnet to reach the soft iron and another second for the field induced in the soft iron to reach back to the electromagnet. The soft iron would build up its field and start to move toward the electromagnet after the electromagnet had been on for one second, but it would take another second for the field of the soft iron to reach back and cause the electromagnet to move toward the soft iron. If, just as the field of the soft iron reaches the electromagnet, the electromagnet changes its

polarity, there will ensue a time during which both the electromagnet and the soft iron tend to move in the same direction. The soft iron will have been attracted toward the electromagnet, and the electromagnet will have been repelled away from the soft iron because the electromagnet changed its polarity. If the electromagnet maintains its new polarity for two seconds, its field will move out to the soft iron and induce an opposite polarity in it, cause it to move toward the electromagnet and send out its new field. The new field will reach back to the electromagnet just as it again changes polarity. Again we have both the electromagnet and the soft iron moving in the same direction.

Thus, we have a cycle, which can be repeated.

Synchronize two electromagnets as above, at a distance of one foot. How about it? Do we get propulsion, or not?—Edgar R. Schot, Benton, Missouri.

Hm-m-m! On this basis, although action and reaction are Newtonianly equal and opposite—they aren't simultaneous!

Dear John:

In Richardson's article "Today It's Turbulence," the following two sentences appear: "The average granule itself turned out to be around one thousand miles in diameter. To fix the idea in mind you can think of a granule as being the same size as the British Isles."

Now Richardson must be letting his Anglo-Saxon ancestry run away with him. The British Isles from the Orkney's to Lands End—north to south—is about six hundred miles and from the River Shannon to Yarmouth is some five hundred miles. To fix the size of the average granule in mind, therefore, let us think of it as four times the size of the British Isles, including all the water among it and some of the water around it.

The area of a circle one thousand miles in diameter is about eight hundred thousand square miles. The land area of the British Isles—including Eire—is about one hundred twenty thousand square miles. So

in order to fix the idea in *my* mind I'm going to think of solar granules as being the size of Mexico.

Of course, if Dr. Richardson meant the granule was one thousand miles in *circumference*, then its area becomes eighty thousand which is just a little under the combined land area of England, Wales and Scotland.

(I sound as if I know a lot, don't I? Actually, I've got a huge atlas in my lap and I keep consulting it like mad.)—Isaac Asimov.

Since no one can actually comprehend an area that size anyway, let's just say they're BIG granules!

Dear Mr. Campbell:

Eric Frank Russell's story, "... And Then There Were None," was both interesting and entertaining. I got to thinking, however, about some of the deeper implications of the Gands' combination of anarchy and modified barter. It seems to me that these two characteristics would hinder and even limit the physical development of a culture.

In the first place, any enterprise involving two or more people with a common material objective will require decisions to be made about methods and intermediate objectives, and then these decisions will have to be carried out. As the enterprise becomes larger and more complex, the separation of these two types of activity becomes greater,

and so does the chance of disagreement about methods and objectives. It wouldn't take very many people saying "F—I.W." to stop the project.

With regard to the "ob" system of exchange, I'd like to know whether all obs are of the same value; and if not, who determines their relative values and how. Either way, I don't think I'd care to be the accountant in the roller cycle factory that was mentioned in the story.

If Mr. Russell can explain away these difficulties, I'll concede that he is a genius at political science and economics, as well as an excellent teller of tales.—Robert L. Rorschach, 1982 So. 14th East, Salt Lake City 6, Utah.

In other words, how many favors make an "ob"?

Dear Mr. Campbell:

You don't have to go back to the hotel clerk story for an apparent mathematical dilemma. The present tax laws provide some stranger-than-fiction results. Here's an example:

Let us suppose that I have been engaged by a corporation now in excess profits taxes to obtain a refund of prior years' taxes. I am successful in prosecuting the claim and the corporation receives a refund of ten thousand dollars.

"Fine work," says the president of the concern. "What is your fee?"

"Ten thousand dollars," I say.

BRASS TACKS



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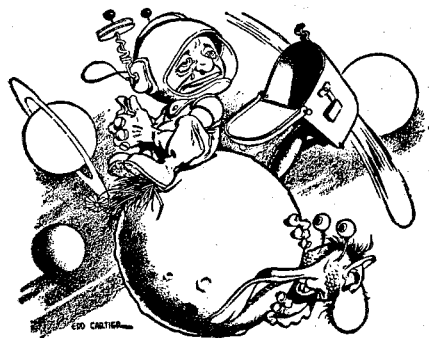
"What!" expostulates the president. "Then we have gained nothing."

"Oh, yes, you have," I say. "You have profited by seven thousand seven hundred dollars."

Here's why: The ten thousand dollars refund is not taxable to the corporation, but my fee is deductible in the current year. This ten thousand dollars deduction will offset income in the current year which otherwise would be taxed at seventy-seven per cent.

Nice business! (My fees aren't really that high.)—Robert E. Nelson, Tax Attorney.

And I'll bet that a little state income



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tax effect on top of that would make the company's "profit" even higher!

Dear Mr. Campbell:

Having been greatly intrigued by the possibilities inherent in the use of radiation pressure as a method of propulsion in interplanetary space as described in Mr. Saunders' article—ASF May '51—I would like to point out a few potentialities of the system which I think were overlooked.

The first stems from the fact that, although the shape of the sail would be nearly hemispherical, it would not be exactly a hemisphere but rather a paraboloidal section. One of the properties of a parabola is the fact that incident radiation parallel to the axis can be reflected to a common focus, hence we would have, at the focus, a center of intense radiation.

The energy available at the focus of 61 km² at the distance of the earth from the sun is tremendous—one hundred million horsepower—and its usage would not entail serious engineering difficulties. This energy could be used for operation of internal machinery, reduction of ores, or the electrolysis of water for rocket fuel.

The second lies in the possibility of using the mass of the sailing vessel as a storehouse of momentum. Assuming Mr. Saunders' minimum practical orbit of 2,000 km altitude, we find that only approximately

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one half of escape velocity is necessary to elevate an object to that altitude. At this point a small missile could be picked up by a sailing vessel, given an added impetus, and be released to assume an orbit higher than the original; whereupon the sailing vessel could erect its sails and use radiation pressure to restore its original orbit.

By using elliptical orbits and allowing contact at the aphelion of the missile's orbit and the perihelion of the sailing vessel's orbit a relative velocity would exist between the two objects.

In space the use of a cable kilometers in length is practical. By allowing the system of sailing vessel and extended cable a rotational motion, the end of the cable could be made to move parallel to the vessel.

After contact the vessel and missile could remain connected while they rotate 180°; then the missile could be released with the addition of rotational velocity.

By using several stages a stairway

into space could be built capable of raising a missile out of a gravitational field and hurled into space. Similarly a missile could be lowered close to a planet's surface.

The saving in chemical energy is greater than appears at first glance since the fuel required is an exponential function of the velocity to be obtained. I am prone to agree with Mr. Ley that the sailing vessel is too slow for interplanetary travel but it may have uses as a base and a source of fuel and momentum for smaller vessels; for instance, it might be cheaper to mine the moons and asteroids for water, methane and metals, reduce these with the energy available at the focus, use the hydrogen and oxygen of water as fuel and transport them to the vicinity of a planet than to raise them against the planet's gravitation.—Carl R. Millhoff, Barberton, Ohio.

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Continued from page 5

ferred, and wife wanting the seashore. They *could* go their separate ways—but frequently husband decides that agreement is more to be desired than the extra advantages-from-his-viewpoint of the mountains. That is, the desirability of agreement itself is a factor in deciding the issue.

Injustice comes into the picture when one of the two parties attempts to use the desirability of agreement, deliberately, as a means of swinging the balance his way. This is one of the commonest, and meanest, tricks of discussion. On the domestic level, it is typified by "If you loved me you'd . . ." and its ten thousand variations. On the international level, it is done by similar means precisely: "If they were peace-loving as we are . . ."

No human, in his personal relations, can be more unfair or dishonest, than to use the desire for agreement to force agreement his way. And no nation or group can be more completely dishonest than to use the argument "Well, they've got to do it our way or we won't play ball." The discussion which degenerates to a question of which side can apply force to get agreement is not seeking justice, but is exercising pure dishonesty. The wife or husband who seeks to attain agreement by "If you loved me you'd . . ." tactics is, in fact, worse than the husband who achieves agreement on the "I'll beat the blazes outa ya if ya don't . . ." basis. The latter, while crude, is at least honest.

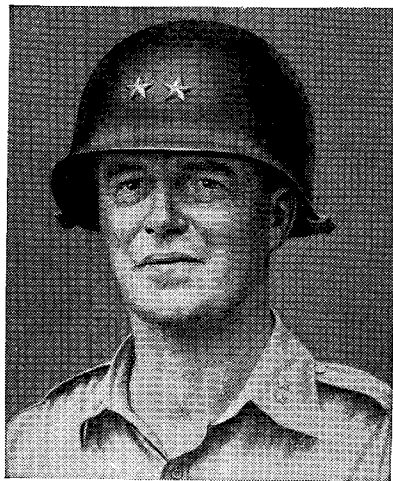
Actually, it would help a great deal, in any effort to achieve agreement and justice, to have some good, sound, workable definitions to start with. Each of us *feels* certain things are true, without ever having put down a definitive recognition of the actual definitions we are, in fact, using. Probably the most important is the "simple" matter of dishonesty. What is it? Lying? But what constitutes a lie? In the usual definition—"an untruth"—every story in this magazine is a lie. I know several men who are most engaging liars, in that sense—you never can be sure an experience they recount is true, and it never bothers anyone, for they are completely honest men. I know of—for I do, not number among my friends any such—men who never have been found to be liars—but are dishonest to the core. The land salesman who sells a tract of oil land under which a rich oil field is later found may have told the truth, and been utterly dishonest.

It seems to me that the essence of dishonesty is to commit such acts—vocally or otherwise—as to attempt to make someone believe that which you do not believe, to your advantage and their disadvantage.

Thus the "If they were peace-loving . . ." or "If you loved me . . ." appeals are the purest essence of dishonesty; they are used to make it appear that agreement on the demanded terms is an act of good faith—while the demanding one has no such belief, and no such good faith in fact.

THE EDITOR.

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